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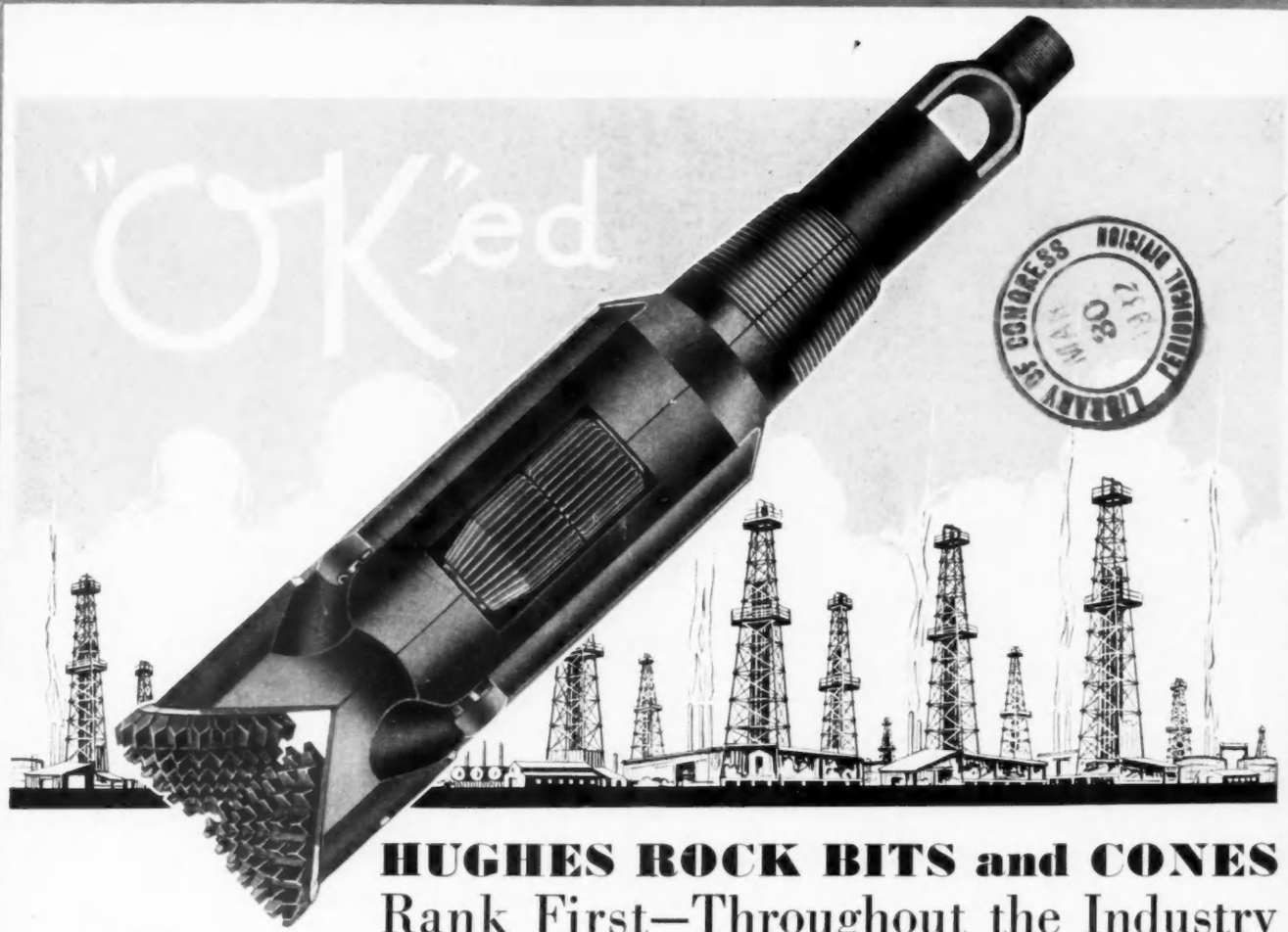
THE OIL WEEKLY

OIL & GAS ENGINEERING

News Statistics



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March 11, 1932

ADVERTISERS' INDEX, LAST PAGE

EDITORIAL INDEX, PAGE 5

SORRY...but we CAN'T get that order out today!

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And, perhaps future orders lost. But even if not, it's still a fact that shut-downs due to faulty drives cost money . . . increase overhead . . . eat into profits.

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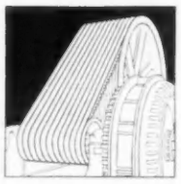

These are just a few of the reasons why Dayton Cog-Belt Drives *reduce belt replacements often more than half* . . . why they practically eliminate drive-trouble shut-downs . . . why they increase production at a lower cost. They offer you many other advantages equally important. They save floor space, save in length and number of belts required, save in belt investment and belt upkeep expense.

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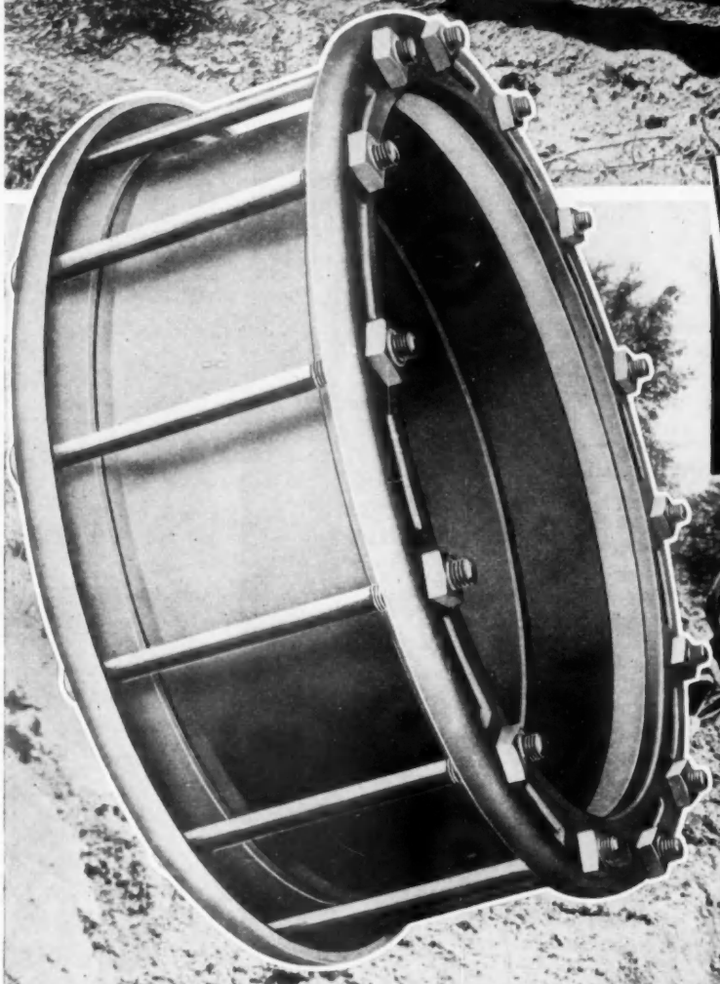
COG-BELT DRIVES

The OIL WEEKLY. Issued weekly by the Gulf Publishing Co., 3301 Buffalo Drive, Houston, Texas. Subscription price $1.00 per year; 15 cents per copy. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

ON THE LONG JUMP
TO NORTHERN IOWA



UPON reaching Mason City, the first 700 miles of Northern Natural Gas Co.'s trunk-line project was completed. From Texas Panhandle into Kansas; thence across Nebraska and Iowa—Dresser Couplings facilitated the construction. Their use on this long line testifies anew to Dresser flexibility and permanent tightness.

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Eliminate ALL FEAR When You Run The Baker Hydraulic Wall Scraper

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It has eliminated once and for all time the instinctive fear that every oil man has when he runs a tool into the well—

The fear that, perhaps, he will not be able to get that tool out of the well again.

Why do you suppose that the Baker Wall Scraper is given the preference on practically all jobs having to do with reaming, under-reaming, and scraping?

A glance at the illustration at the right will make this clear. Notice that the Baker Wall Scraper has a body only large enough to give the required factors of safety. Notice its smooth contour. Notice that the Blades fit snugly into a slot cut into the body, offering no possibility of obstruction when closed.

Notice that the Blades close in a downward direction—not in and out, but straight down from the cutting position. The moment that circulation is cut down, these Blades will close. *And, even if they would not close by the normal action of the spring on the plunger, the instant that they hit the bottom of the Shoe, in coming out of the hole, the Shoe (or casing) would close them downward into their slot, automatically.*

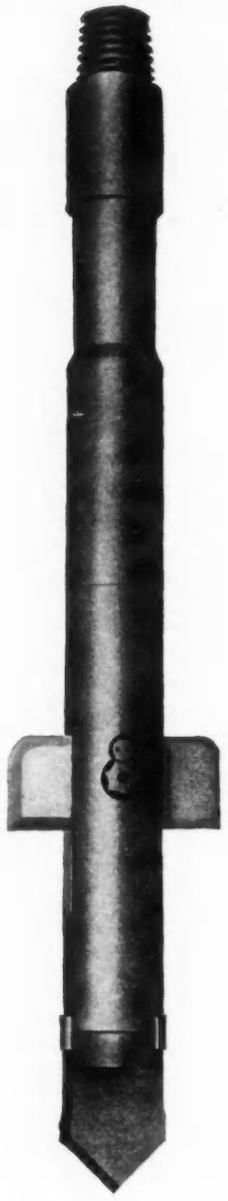
There is no chance of jamming or sticking, if the tool is in proper operating condition when it is run into the hole.

Thus is eliminated that well-justified fear that an under-reaming tool or a scraping tool will become so jammed or caught that it cannot be pulled out of the hole.

This one feature has led many of the large operators to use the Baker Wall Scraper in preference to any other tool available.

But, this feature, important as it is, is only one reason why you should use the Baker Wall Scraper. There are many other, equally good, reasons:

Its unusual reaming capacity, from 5″ to 29″, with Blades stepped at ¼″. Its use in straightening crooked holes; landing a liner; re-cementing when bottom plug fails; scraping walls before cementing; cleaning up and bringing in the well; scraping out a cavity of any desired size before setting water string; and many other, equally important uses.



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March 11, 1932
Vol. 64, No. 13

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S. W. ROBINSON
Editor

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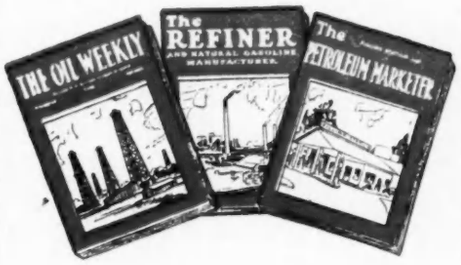

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TO GULF COAST PRODUCERS WHO ARE HOLDING COSTS DOWN

We have a machine on our floor that takes the place of 10 individual drawworks or Bullwheels, and lays its own track to a well under all conditions.

With the price of pipe line oil holding steady at a low figure, and profits entirely dependent upon economical operation, Gulf Coast oil men again face the question of how to handle rod and tubing pulling jobs rapidly, dependably, and at the lowest possible cost. Almost every producer admits that a powerful, reliable winch that will handle ten to fifteen wells, is cheaper by far than the cost of ten or fifteen individual draw-works or bull-wheel installations. Their only problem in the past has been to get a winch that could be driven under its own power, regardless of lease conditions, right to the well needing service.

Today, you can buy just such a machine at a reasonable price—a machine powered by the world's finest and most dependable tractor — The Caterpillar.

We have one of these machines on the floor of our show room in Houston, ready to demonstrate or to go to work on your lease. It is an All-Steel, Cardwell Winch, mounted on a Caterpillar 30 Tractor. This machine will travel under its own power to any well not located in a swamp or a lake. It has six forward speeds, and two reverse speeds for starting the block down fast. It has a maximum single-line pull of 20,600 pounds, enough power to pull deep wells with a minimum number of lines. It has a drum barrel 14¾ inches in diameter—big enough to insure long life for your lines. It has 960 square inches of brake area, enough to hold any load the machine can pull, and hold it easily. It has a host of other features we'll be glad to explain or demonstrate to any operator in the Gulf Coast or South Texas area.

On very short order, we can also provide a Cardwell All-Steel Winch mounted on a Caterpillar 60 Tractor—big enough to handle the deepest wells with ease. Or, we can furnish a smaller machine for installation on either a Caterpillar 15 or a Caterpillar 20. Complete specifications on any of these machines gladly furnished on request.

Beyond a question of doubt, these machines, powered by genuine Caterpillar Tractors, answer every requirement of the producer who must hold down his equipment investment to a minimum. We guarantee their performance on delivery to your lease, and if they fail in any particular you are privileged to return the machine without charge.

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We shall be delighted to have you call by our warehouse and talk it over with us, or one of our field men will be glad to bring the facts to you, without any obligation, on request.

GULF TRACTOR & EQUIPMENT COMPANY

3100 POLK AVENUE

HOUSTON — TEXAS

MAR 14 1932

VOLUME 64, No. 13 MARCH 11, 1932

THE OIL WEEKLY

SPECIALIZED TO OIL AND GAS PRODUCTION
AND PIPE LINE DIVISIONS

ENGINEERING • NEWS • STATISTICS

The Changing Panorama

What has been recommended in the way of the oil industry's contribution to overcoming the difficulties the government is in with its budget will be variously discussed until final word comes that the president has signed the revenue bill, and then the only question will be the paying. In the meantime the proposal has to go through both houses of congress with opportunities for amendment. The excise tax on imports probably will not be noticed so long as exports can be held in balance so that foreign oil may come in under bond to refine and export without paying the excise. The four cents per gallon tax on lubricating oil is no more than to be expected with the states laying off of that profitable source, although many have looked at it with longing eyes. The tax on lubricants probably can be absorbed by the makers, considering that prices to motorists have been firm, or sometimes increased, during the period when gasoline was cheaper than the tax. The sales tax of 2¼ per cent goes on the oil industry the same as all other manufacturers, presenting only one question for debate should it be adopted: Will the tax on the spread between refinery and retail selling prices be enough to force refiners selling the public direct through service stations to retire from the retail field? At least it will be patriotic now to increase the price so that the government gets a better split.

Aerial view of booster stations of Petroleum Securities Company and General Petroleum Corporation at the beginning of the Ridge Route, 32 miles south of Bakersfield. Grapevine village is seen in the middle of the picture, and the winding ribbon is the main Ridge Route highway to Los Angeles.

Estimating the ultimate yield of the great area known as the East Texas field will be a popular pastime of geologists probably until the ultimate "I told you so." The first serious guessing, it will be recalled, was in connection with the problem of what to do with the oceans of salt water that was soon to follow the oil. Salt water production being held back by various injunctions, how much oil will come out remains a question. Using sand thicknesses, porosity of sand and other factors in connection with a cross section of the known area makes it an interesting mathematical problem.

Page 21.

Reservoir Pressures

Reservoir pressures are currently of important consideration. Conservation of pressures was the key note of the "new conception" idea that was considered at the last general meeting of the American Petroleum Institute, and conservation authorities are considering that factor when naming well allowables where "economic" waste is not to be considered. The engineers are extending their studies along this line and some interesting phenomena were reported on the behavior or natural gas in oil sand reservoirs at the recent meeting of the A. I. M. E. at New York.

Page 22.

Our current discussion on drilling mud promises to bring forth some discussion. Probably because proper handling and functions of mud are still largely a matter of guessing and opinion, despite progress in instruments and practical

study. Mud weight no longer has to be guessed with instruments available to give a continuous record, but there still seems to be a tendency to confuse weight and viscosity. Page 27.

Some of the greatest characters in history got famous failing. J. L. Pattison was not seeking a niche in the hall of fame, but was following a hunch and favorable geology when he drilled what probably is the champion among wildcat failures in the point of hard luck during the test. Plenty of time and money were spent on drilling his wildcat in Oklahoma. Every conceivable fishing job, fires and all the ills that befall a drilling operation were encountered. Despite the fires, one derrick stayed through, as did the boiler. Page 59.

The third annual exposition at Los Angeles, beginning March 21, is bringing together several important groups of the petroleum industry, in addition to presenting a worth-while exhibit of late improvements in equipment for all branches of the industry. Page 72.

The Oil Man's Calendar

MARCH

14-18 *American Chemical Society, New Orleans, Louisiana.*
15-17 *American Railway Association, Chicago, Illinois.*
21-27 *Oil Equipment and Engineering Exposition, Los Angeles (Third Annual.)*
23-25 *Michigan Oil Men's Association, Detroit, Michigan (Statler Hotel.)*
24-26 *American Association of Petroleum Geologists, Oklahoma City, Oklahoma.*
28 *Pacific Coast District A. P. I. Production Division, Los Angeles, (Engineers Club.)*
28- 1 *American Chemical Society, New Orleans, Louisiana.*
29 *Natural Gasoline Association of America, Ranger, Texas (plant operators.)*

APRIL

4- 9 *Western Petroleum Refiners Association, Excelsior Springs, Missouri.*
2-10 *National Aircraft Show, Detroit, Michigan.*
6- 8 *American Gas Association, Birmingham, Alabama (Distribution Committee, Technical Section.)*
11-16 *American Oil Burner Association, Boston, Mass. (Ninth Annual.)*
14-15 *Southwestern District A.P.I. Division of Production, Tyler, Texas (Spring Meeting.)*
21-22 *National Petroleum Association, Cleveland, Ohio (Semi-Annual.)*
22-24 *Petroleum Industry Electrical Association, Dallas, Texas (Baker Hotel.)*
26-28 *Southwestern Gas Measurement Short Course, Norman, Oklahoma.*
27-29 *National Pipe and Supplies Association, White Sulphur Springs, W. Va.*

MAY

4- 6 *National Foreign Trade Council, Honolulu, Hawaii.*
9-11 *Natural Gas Department, American Gas Association, Tulsa, Oklahoma.*
9-13 *National Fire Protection Association, Atlantic City, N. J.*
17-19 *Natural Gasoline Association of America, Tulsa, Oklahoma (Mayo Hotel.)*

JUNE

1- 3 *American Petroleum Institute (Mid-Year Divisional Meetings), Tulsa, Oklahoma (Mayo Hotel.)*
6- 9 *National Association of Purchasing Agents, Detroit, Michigan.*
20-24 *American Society for Testing Materials, Atlantic City, N. J.*

SEPTEMBER

14-16 *National Petroleum Association, Atlantic City, N. J. (Annual.)*

NOVEMBER

15-17 *American Petroleum Institute, Houston, Texas (Annual.)*

The wild well which has been burning in Roumania for so many months, despite efforts of fire-fighters and loss of lives, finally has been conquered. Page 14.

The "Kessler Plan" has been revised in an attempt to make it conform to the ideas of American's and their anti-trust laws. The new plan, however, overlooks the consumer for whose protection the anti-trust laws were passed. Any scheme which would stabilize the oil industry is of interest, however, and American oil men will give it careful consideration.

Market Better

Market news for the week is all encouraging; even California reports a more favorable tone. Production took a slight rise and still runs were reduced by about 200,000 barrels daily, with result that for the first time in four months there was a recession in stocks of gasoline. Gasoline prices in the Mid-Continent were stronger as result of better shipments. This would indicate that at least part of the accumulation of stocks in recent weeks has been the result of jobbers permitting their stocks to be low. Page 35.

WORLD CARTEL *would* Balance Production *with* Consumption

By J. B. AUG. KESSLER,
Managing Director, Royal Dutch Company

J. B. AUG. KESSLER, managing director of Royal Dutch-Shell companies, has made public a revision of his plan for the stabilization of the world's petroleum industry. The original plan, although comprehensive in scope, did not meet with acceptance in the United States because it ran afoul of anti-trust laws, because it did not include Russia, and, perhaps, because it called on the United States to supply a very large percentage of its fund, the control of which would have been placed largely in other hands.

The original plan encompassed the domestic production and home markets of the United States, and was thought to be unwieldly because of the very magnitude of the funds and figures involved. The revision avoids the complexities of the situation within the United States, and concerns itself only with production outside the United States and exports of petroleum products from this country. Proposing to rehabilitate the dormant Export Petroleum Association, which would operate under the Webb-Pomerene Act, Kessler seeks thus to escape conflict with the anti-trust laws.

The revision, in effect, is a proposal for the establishment of a world cartel, except that it would not extend to the domestic markets of the United States. Producers, refiners, and distributors of oils sold within this country would not be affected, except insofar as world price levels might be raised and domestic markets might reflect conditions of improvement in external markets.

IN view of the impossibility of the U. S. A. oil industry co-operating under my original scheme, I submit on the basis of the following statistics, a method by which the U. S. A. oil industry can take its place in a plan for world co-operation which will do no more and no less than speed up the normal functioning of the economic law of supply and demand towards balancing supply and demand. Under this plan the balance between supply and demand would be promptly restored whilst avoiding the waste of irreplaceable riches.

For the years 1929, 1930 and 1931 import and export figures of the U. S. were as follows:

IMPORTS—	1929 Barrels	1930 Barrels	1931 Barrels (Estimated)
Crude	78,932,572	62,129,419	46,837,400
Gasoline	8,834,302	16,926,800	13,994,600
Kerosene	208,008	200,086	12,500
Fuel and gas oil	20,545,498	26,080,383	24,996,600
Other products	44,557	173,721	74,800
Total crude and products	108,564,937	105,510,409	85,915,900
EXPORTS—			(Estimated)
Crude	26,394,349	23,704,162	26,688,500
Gasoline	60,006,674	63,197,033	44,996,200
Kerosene	19,820,352	16,688,994	12,975,200
Gas and fuel oil	35,714,784	32,377,758	27,139,200
Other products	10,835,328	9,901,780	8,184,300
Total crude and products	152,771,487	145,869,727	119,983,400

In the international agreement that I now propose, the only place that the U. S. need take, and the only undertaking that they need give is the following: (I have received very authoritative American legal advice that this proposal is on all fours with U. S. laws).

The U. S. oil industry undertakes that the total of the U. S. exports of crude, gasoline, kerosene, gas oil and fuel oil and "other products" during any quarter will not be more than the following:

Crude Oil—not more than the imports of crude during that quarter.

Gasoline—not more than the imports of gasoline during

that quarter plus 50 per cent of the balance between the crude imports and crude exports during that quarter plus 6,000,000 barrels.

Kerosene—not more than the imports of kerosene during that quarter plus 20 per cent of the difference between crude import and crude exports during that quarter plus 2,000,000 barrels.

Gas Oil and Fuel Oil—not more than the imports of gas oil and fuel oil during that quarter plus 20 per cent of the difference between crude imports and crude exports during that quarter.

"Other Products"—2,500,000 barrels.

If this proposal were adopted it follows that an import duty or a prohibition of import into the U. S. cannot unbalance the world arrangement (about which more lower down) nor would it cause any hardship for the U. S.

This proposal really means that the U. S. are given a first call on the export markets to the extent of a certain barrellage per quarter of gasoline and kerosene and of "other products" (viz. 6,000,000 barrels of gasoline, 2,000,000 barrels of kerosene, and 2,500,000 barrels of other products).

As it is not at all unlikely that the world consumption will continue to drop for a certain period, this first call on the export markets is a great advantage to the U. S., and in order to prevent the possibility that they (U.S.) would take this advantage, but would cancel the arrangement as soon as the world consumption would go up again, it is clear that the U. S. oil industry should undertake not to cancel the agreement for a period of, say five years.

WE are printing herewith the entire petroleum "World Salvation Plan" of J. B. Aug. Kessler, managing director of the Royal Dutch Company, the Hague. We are printing it because it is a remarkable document, evidently the result of much study and shows the point to which oil executives in other countries have become agitated by the international petroleum situation.

That the plan has any likelihood of practical adoption seems to us remote. To us it appears that some of the problems which Mr. Kessler assumes will be solved by the very plan itself would only be accentuated thereby.

However, Roy E. Leigh, foreign editor of The Oil Weekly, in a note to the editor points out that:

"The revision, if adjudged desirable, seems at first glance to be more nearly workable than did the original. The Webb-Pomerene Act permits co-operation and concerted action by American interests insofar as exports are concerned. A large majority among exporters of American oils might be recruited for the re-organization of the Export Petroleum Association;* but it would be surprising if unanimity should be secured. However, the collective and organized strength in foreign markets of prospective members of such an association might serve to offset any weakness or lack of complete control of American exports at their source.

"The cartel system is typically European; and European oil people, as well as American interests operating internationally and selling oil in foreign markets, are familiar with its operation. One point which seems to favor the workability of the reverse 'Kessler Plan' is that those exporters of American oils who might be expected to figure in the rehabilitation of the Export Petroleum Association are, largely, participants in international markets, as mentioned above, and, as such, are not unacquainted with methods of co-operation and organization in control of output for the stabilization of markets and prices."

If all oil producing countries would enter into such an agreement, if the plan worked out, if one country did not "over participate" in the central fund for holding down a production which might not actually be potentially as great as claimed, if each new nation coming into the production column would waive the obvious advantage of being a maverick†, if the statesmen, or, if you will, the politicians of the United States and of other nations did not feel that the return per barrel of oil was greater to the oil producer than it should be, if we were not sure that these politicians and, if you will, statesmen, would not immediately conclude that a highly interested party (the consuming public) were not getting it in the neck, to use old-fashioned U. S. A. slang, then the plan might have a chance of adoption.

But what a lot of "ifs."!

***Editor*, The Oil Weekly**

Suggests Revival of Export Association

For the purpose of cooperating with the rest of the world under this plan the U. S. oil industry should revive the now dormant Export Petroleum Association and vest in it the necessary authority to represent the U. S. oil industry as one cooperating unit under this plan.*

It is proposed that all other oil producing countries whose

*Export Petroleum Association, revival of which is suggested by Kessler, includes 16 or 17 leading American oil companies, representing virtually the entire American export trade in petroleum products. Its board of directors is composed of presidents and vice-presidents of member companies. The association, which has been dormant since November, 1930, has no president, but Gilbert H. Montague, New York, lawyer, 67 Wall Street, is its vice-president and is reputed to have been its organizer. Persons having knowledge of activities of the association referred inquiries to Montague but he refused to discuss it or its membership and declined to reveal names of its officers and directors, referring matter to R. C. Holmes of The Texas Corporation. It is understood that the association was incorporated in Delaware and that it has not been liquidated. Thus it would appear that it can be rehabilitated if thought desirable.

†Maverick—a cow-country term for an animal unbranded. In this instance used to designate a country not wearing the seal and sign of the Plan.

exports are larger than their imports will co-operate under the plan.

In my original plan I left Soviet Russia out for several reasons. Many of the comments on my scheme received from various quarters express the opinion that without Soviet Russia it could not work satisfactorily. I therefore now propose that Russia will take its place with the other producing countries co-operating under the scheme.

The countries, therefore, that would be parties to the agreement are:

U. S. A. (on special conditions in accordance with U. S. laws)

Venezuela	Colombia
Russia	Peru
Persia	Trinidad
Roumania	Poland
Mexico	Sarawak
Dutch East Indies	Ecuador

The oil industry in each of those countries should appoint fully authorized representatives for an international meeting.

There are only two prerequisite conditions for this international meeting.

The first is that the oil industrialists of these countries honestly believe that an endeavor should be made to bring the world production, excluding the U. S., down to a figure equal to the "normal" world consumption, excluding the U. S. Lower down I shall explain what I understand by the "normal" world consumption.

To Prohibit Drilling

The second is that they each (with the exception of U. S.) undertake for themselves that they will get their government to prohibit any drilling as long as the production of their country is above the figure which is considered by the oil industrialists of that country (and by them alone) as the minimum production to which they are entitled under the world oil conservation scheme. As the only undertaking which is asked from the U. S. A. oil industry is that they shall not export more than a certain quantity, as mentioned above, any arrangement about production or prohibition of drilling need not be entered into by the U. S. A. oil industry.

As an alternative to such a prohibition of drilling a tax on drilling of not less than say $30 per foot may be considered. An obvious disadvantage of a drilling tax is that it may become permanent, which would mean a lasting burden for the oil industry. On the other hand it may be difficult to get governments to prohibit drilling (under certain conditions) altogether. In fact both alternatives have their advantages and disadvantages.

I want to emphasize that each country can fix for itself its minimum production. The lower they fix it the easier my scheme will work, but if they do not fix it low enough the scheme will still not only be workable, but the only prompt way out of the present troubles that I have heard of, and that will save the industry before there are so many casualties that the governments are bound to interfere (to a far larger extent than by temporarily prohibiting or taxing drilling as long as there is over-production) in order to save their country, the balance of which is at present endangered by lack of co-operation in the industry.

Meeting Will Determine Production

The international meeting will first of all ascertain how much the representatives of each participating country (excluding the U. S.) consider their country should produce under the world conservation scheme. Each representative will table this figure, hereinafter called the "declared minimum."

J. B. AUG. KESSLER, ***Father of the Plan***
Managing Director, Royal Dutch Company

Let us assume that these claims in barrels per day amount to:

	Barrels per day
Venezuela	368,000
Russia	373,000
Persia	116,000
Roumania	108,000
Mexico	85,000
Dutch East Indies	100,000
Colombia	52,000
Peru	27,000
Trinidad	24,000
Poland	11,000
Sarawak	14,000
Ecuador	4,000
	1,282,000

This is equivalent to 468,000,000 barrels per annum.

From the part which the U. S. oil industry should take in this plan, as mentioned above, it is clear that the world's oil markets, excluding the U. S. home market, are affected by U. S. production to the extent of the excess of U. S. exports over imports, i. e. 6,000,000 barrels gasoline plus 2,000,000 barrels kerosene plus 2,500,000 barrels of "other products" equals 10,500,000 barrels of products per quarter or 42,000,000 barrels per annum.

The total quantity of oil produced affecting the world market outside the U. S. would therefore be the sum of the above "declared minima," i. e. 468,000,000 barrels per annum plus the

A. P. I. Will Consider Kessler Plan

JUDGE AMOS L. BEATY, president of the American Petroleum Institute, told The Oil Weekly, last Thursday, that he had not seen the full text of the revised "Kessler Plan"; but that he was pleased to learn that leaders abroad are devoting constructive thought to the solution of problems which affect the oil industry of the whole world.

In response to a suggestion that the revision may formally be submitted for the consideration of the American Petroleum Institute through the agency of the Association of Roumanian Petroleum Industrialists, or by Mr. Kessler himself. Judge Beaty said that, in such event, he will give it careful consideration and arrange to have it laid before the Institute's board of directors.

It will be remembered that the original plan was submitted for the consideration of the Institute by the Roumanian association, and that the board of directors of the former replied in part as follows on November 12, 1931:

". . . Owing to the laws of the United States the American petroleum industry cannot accept the 'Kessler Plan' as a basis for discussion nor any other plan involving a definitive agreement between producers to restrict production but nevertheless believes that benefits might result from a world conference of producers which would be limited to an exchange of views of the worldwide economic situation and of the supply and demand factors in order to give the producers of every country the opportunity in conformity with their own laws individually to regulate their operations in the most intelligent manner. . ."

The willingness of the Institute to call such a conference was also expressed on that occasion.

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excess of U. S. exports over imports, i. e. 42,000,000 barrels per annum, or 510,000,000 barrels per annum.

To Conserve World's Oil Riches

It is beyond discussion that the flood of surplus oil today has caused it to find an outlet outside its "normal" use. This has only been possible by this surplus oil being sold at such low prices as to displace other products (mainly coal) and simultaneously bringing down the entire price structure of the world's oil market to a disastrous level.

In order, therefore, to conserve the world's oil riches for the world's "normal" requirements, one of the tasks of the international meeting must be to ascertain the production necessary to satisfy the "normal" consumption of the world outside U. S. A. Let us assume that the figure so established is 100,000,000 barrels per annum below the above-mentioned "declared minima" plus the agreed exports from U. S. plus the production in those countries where imports are larger than exports. In other words, by producing during the next 12 months 100,000,000 barrels less than their "declared minima" the countries cooperating under the conservation plan would cause world production to be in line with "normal" world consumption.

These 100,000,000 barrels by which the "declared minima" of these countries exceed the "normal" world consumption is what may be called the "top" of their production—that is to say, that part of their production that cost them least of all. It is, so to say, the production which they can get by opening up their wells just a little more. I think I may assume that the average cost of that part of their oil is not more than 20 cents per barrel. In calculating the net back on the products contained in this "top" of the crude production, the cost of refining need not be charged with any of the overhead expenses of pumping and refining that crude. However low, therefore, the returns are, I think I may assume that the production and selling of the products contained in the "top" of their crude production still leaves the producers a return of say, 40 cents per barrel, or, in other words, a cash profit of 20 cents per barrel.

Yearly Over-Production

In order to induce the producers of the above-mentioned countries not to produce the 100,000,000 barrels (which we have found to be the "declared yearly over-production") those producers would therefore have to be offered 20 cents per barrel as an indemnity for not producing that quantity. The moment, however, that the industry has come together on such a scheme one may assume that prices would improve and that therefore the calculated profit of 20 cents per barrel would no longer be good enough to induce producers to restrict their production. I assume that my calculated profit of 20 cents per barrel would, as a result of the world-wide arrangement, increase at once (by a rise in the price of products) to 40 cents per barrel. We should therefore have to offer for each barrel by which the actual production remains below the "declared minima" a payment of 40 cents per barrel. The "declared yearly over-production" being 100,000,000 barrels, the "declared over-production for a quarter" is 25,000,000 barrels, and that multiplied by 40 cents per barrel gives an amount of $10,000,000. This amount would have to be available before the beginning of the first quarter year of the arrangement in order to have a sufficiently strong financial inducement to bring over production to an end, and is to be found by the oil industry in each of the countries cooperating under the plan, and also the U. S., paying respectively an amount of about eight cents per barrel on the quantities represented by their "declared quarterly minimum" and an equal amount per barrel on the agreed quarterly excess

of U. S. exports over imports $-\frac{510{,}000{,}000}{4} \times 8c = \$10{,}000{,}000.$

In other words, on the "declared quarterly minima" plus the "agreed quarterly excess of U. S. exports over imports," i. e. $\frac{510{,}000{,}000}{4} = 127{,}500{,}000$ barrels the oil industry in the above

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OBSERVATIONS of those who have studied the revised Kessler plan are that it is more workable than the original proposal. Some comment was to the effect that progress toward world balance could be made without the plan if Russia and Roumania would adopt local curtailment measures to a degree equal to that already practiced in other oil producing countries.

Roumanian sponsors of the Kessler plan have been charged with price cutting and dumping.

A suggested arrangement is that foreign oil exporting countries whose development is under centralized control agree with American exporters to restrict exports in ratio with their own production as American exports bear to domestic production of the United States.

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countries has to pay into the central fund before the beginning of the first quarter eight cents per barrel.

If any of the countries represented would consider the total sum to be found by it as too great a burden, it can reduce it by decreasing its "declared minimum production."

(*Continued on page* 43)

Import Duty *and* Lube Oil Tax Imposed by Revenue Bill

WASHINGTON, D. C.—The tax measure through which it is proposed to balance the budget of the United States treasury came from the ways and means committee of the house of representatives Monday with the following provisions in relation to the petroleum industry:

A levy of one cent per gallon on all imports of crude oil, fuel oil and gasoline;

An excise tax of four cents per gallon on domestic sales of lubricating oil of 20 to 70 S. A. E. numbers inclusive;

A sales tax of 2¼ per cent on all manufactured goods except those for exportation or for governmental agencies;

All manufacturers must secure a license at $2 per year. Manufacturers whose output is less than $20,000 per year are exempt from the sales tax.

An increase from 12 to 13 per cent in the corporation tax rate.

The provision to allow imported materials to enter the United States duty free, provided they are later exported drew first attention from the petroleum industry. This provision is accepted as giving producers of South American oil the privilege of shipping it to the United States for refining, so it can be used in fulfilling export requirements.

The excise tax of four cents per gallon on lubricating oil will meet opposition from the petroleum industry, as W. R. Boyd, Jr., vice president of the American Petroleum Institute said in New York that this provision is class legislation. Evidently lubricating oil would bear a double tax since it would be subject to the tax imposed at the point of manufacture along with all other products and then faces a further levy of four cents a gallon upon sale.

Class Legislation

Although early reports did not so state, there is an impression that the tax on lubricating oil is restricted to that used only in automobiles. Such provision would leave evasion of the tax open in the case of unscruplous dealers, who could list it as moving into industrial uses instead of for motor use.

The openings offered tax evaders were apparent in the whole tax measure and especially within the petroleum industry. In addition to the possibility of the sales tax applying only to oil for automotive use, the general exemption of all taxes in the case of total manufacture being less than $20,000 a year leaves still further opportunity for tax evasion in oil.

Much of the trouble already uncovered in gasoline tax evasion has been with small concerns. The tax measure exempts manufacturers whose volume is less than $20,000 a year, thus leaving it possible for small refining concerns to manufacture both lubricating oil and gasoline and escape the 2¼ per cent tax at the point of manufacture.

Opposition to the tax on imported oils is due to come when the measure reaches the floor of the house for debate later in the week. New England members of congress voiced opposition to the oil imports tax provision on the ground that it will cost manufacturers of this area many millions of dollars. The brunt of this burden they assert will fall upon New England where manufacturing plants use oil for fuel. Indications are that the New England delegation will go to any length to defeat this part of the measure. Practically everything manufactured in New England will be subject to the sales tax and the excise tax on imported oil will add still more to the manufacturing cost.

New York.—Shipping companies have increased tanker rates by three to four cents per barrel in anticipation of a heavy movement of South American oil to United States ports to reach this country before proposed tax rates can become effective. Tanker owners are asking 17 to 18 cents per barrel as compared to previous rates of 14 and 15 cents on gasoline.

The impression in Washington is that the general sales tax will finally be approved by congress. But efforts will be made to gain exemptions from many quarters. The tax on oil imports will be one of the points for this attack.

Although the measure as reported out of committee contained no provision for a tax of one cent a gallon gasoline, as was recommended early in committee hearings, there is still some apprehension concerning this. Some observers believe an effort will be made to impose an excessive tax on gasoline sales.

Whether the tax of 42 cents per barrel on imports will work as an embargo on foreign oil is a question yet to be answered. Wirt Franklin, proponent of the tariff plan, preferred not to be quoted on this question due to the status of the measure.

Testimony before the ways and means committee indicates that the cost of refining Venezuelan crude approximates 21 cents per barrel and that freight to Atlantic seaboard ranges from 11 to 14 cents per barrel. If lifting cost is 20 cents per barrel, Venezuelan crude costs about 55 cents per barrel delivered on Atlantic seaboard. If congress should enact proposed special tax of one cent per gallon on foreign oils, then this devilered cost would be increased to 97 cents per barrel.

Gasoline and fuel oil from one barrel of Maracaibo crude are worth $1.14 in New York harbor at current market. Thus it would appear that proposed tax would not debar Venezuelan oil from seaboard market, although it is considered probable that their adoption may cause an increase in prices along the seaboard.

It must be remembered in this connection that United States tariff commission established a figure of 62 cents per barrel as the value of Maracaibo crude f.o.b. Venezuelan terminal. If this 62 cent figure is correct and contains no pro-

(*Continued on page* 46)

Crater of Romana-Americana, Wild Well at Moreni, Roumania, extinguished and brought under control by M. M. Kinley, Grady Chupp and Costica Lupa.

Wild Roumanian Well Fire Extinguished

M. M. KINLEY, fire-fighting expert of Tulsa, has returned from Roumania where he added another triumph to his record of more than half a hundred conquests of wild and burning oil and gas wells. When interviewed on arrival in New York, Kinley insisted on sharing the credit for his latest exploit in the subjugation of the famous burning well at Moreni with Grady Chupp, field superintendent, and Costica Lupa, Roumanian gang-pusher, who helped him materially in the course of his difficult and hazardous undertaking.

The history of this disastrous fire, which burned for two years and eight months and cost the lives of at least 10 men, is familiar to readers of THE OIL WEEKLY. It is sufficient to repeat that Well No. 160-SP of Societe Romana-Americana, Roumanian subsidiary of Standard Oil Company of New Jersey, which is located in the Moreni field, blew out and caught fire on May 28, 1929; and that it had an initial pressure of 3600 pounds per square inch and an initial production estimated at approximately 177,000,000 cubic feet of gas per day. Major efforts at control included an effort by company engineers to draw off the flow of gas through a tunnel; an unsuccessful effort by the brothers Andreescu, Roumanian fire-fighting experts, to insert a steel die-nipple; and an abortive attempt led by Engineer Vasile Lazar, acting under government authority, to control the well by tapping the casing 195 feet below the surface.

When Kinley was called in all the connections had been blown off, the casing had twice been tapped underground, the well had cratered, and the casings had been shredded and worn thin by the action of escaping gas and sand. The crater was about 185 feet wide by 72 feet deep, and was an extremely hazardous place in which to work, on account of the danger from its caving walls. Several cave-ins occurred during the course of the job; but it so happened that no one was in the pit at such times. Otherwise, the casualty list might have been longer. Escaping gas issued from the bottom of this crater, and burned almost continually for two years and eight months. It was impossible to find the top of the casing, or even to locate the exact mouth of the well.

Kinley made use of a tunnel and other equipment previously installed by company engineers, which was described in part as follows in an article published in THE OIL WEEKLY of August 22, 1930; page 42.

". . . the casing was reached through a tunnel at a point 92 feet underground; a section of the 18-inch casing was cut away, and the four remaining strings were penetrated by

means of a hollow cylindrical forged-steel bit, having heat-treated cutting edges, screwed onto a length of four-inch drill pipe rotated inside of a length of 10-inch line pipe extending to the mouth of the tunnel. This bit, which was driven by a 12 x 14 steam engine installed at the surface, operated through a forged-steel saddle clamped around the 14-inch casing at the bottom of the tunnel. This saddle was re-enforced by vertically connected horizontal hoops of one-half-inch round iron, the whole being encased in a block of concrete three feet six inches square cast around it."

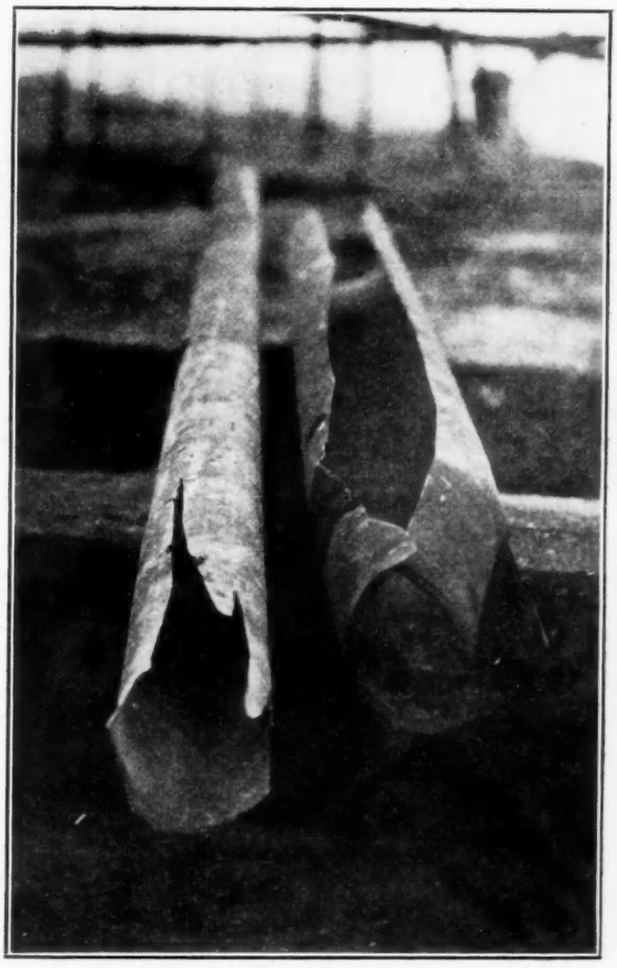
It is understood that the four-inch drill pipe was withdrawn, and that a string of eight-inch casing was set with a clapper valve inside the 10-inch above referred to.

A cut was made in one side of the crater, in which a system of light railway tracks was laid for use in hauling material to and from the bottom of the pit.

Kinley's chief instrument for the control of the well consisted of a sort of inverted funnel, made of boiler plate, which he set over the escaping gas and cemented in place in order to centralize its flow. This funnel is about 8¼ feet in diameter at its mouth or base and about 8¼ feet in height. A joint of pipe, which was welded or otherwise fixed into the small or top end of the inverted funnel, afforded an outlet for the gas during the course of the cementing operation.

The fire was extinguished, fortuitously, by a cave-in of the bank while being cooled with water as a preliminary to an attempt to shoot it out with explosive. The inverted funnel was set in place over the escaping gas at the bottom of the crater; and a suction generated by an electrically-driven blower was applied through the 10-inch in the tunnel, so as to draw off as much as possible of the gas through that outlet. This gas was vented through a stack about 525 feet away from the crater, and thus safely out of range of the fire. With the funnel in place, the fire out, and a large percentage of the gas being drawn off through the tunnel, it was possible to cast a large concrete block around and on top of the funnel. After the concrete was poured to a depth of about 10 feet, a layer of about 15 feet of dirt was placed on top of it. Thereupon, cement was pumped inside the funnel or cap through the protruding length of pipe mentioned above. This cementing operation, which was similar to an ordinary job of cementing casing, had to be repeated several times, as gas escaped around the concrete block to such extent that the vent in the funnel had to be reopened while the cement was setting. A total of 126 sacks of cement was thus pumped inside the funnel before a satisfactory shut-off was secured; and then a quantity of heavy mud was pumped in after it.

Production from this source was turned into the separators on February 7, six months after Kinley started work; and the well is now producing about 14,000,000 cubic feet of gas per day, which is yielding approximately 160 barrels of natural gasoline daily. Flowing pressure has declined to around 32 pounds per square inch.



Casing blown from wild well at Moreni, Roumania.

Vent from Inverted Funnel used by M. M. Kinley in controlling the famous wild well at Moreni, Roumania.

Counter-Suits Brought to Uphold Commission Rule in Eastex

LATEST DEVELOPMENTS IN EAST TEXAS LEGAL TANGLE

Counter injunction against injunction to stop rules of commission applying to Constantin-Wrather wells granted by Federal Judge Bryant.

Militia remains in control except where injunctions have been granted.

Commission will seek injunction in all cases where operators seek to enjoin proration under conservation law.

Dissatisfied operators are more bold, but latest injunction move tends to again quiet situation.

Austin, Texas.—Early this week the Railroad Commission of Texas through legal maneuvers had emerged into a position where it apparently will be secure in controlling the East Texas oil field until court decisions can be obtained in suits attacking the validity of the new state conservation laws under which the commission is carrying out its program.

Fred E. Upchurch, assistant attorney general, acting for the commission, was preparing to ask for cross injunctions against all oil operators seeking to enjoin the commission and to take similar action against those who might in the future seek such injunctions; having received information that Federal Judge Randolph Bryant at Beaumont, Texas, on Monday, March 7, had set a precedent by granting such a cross injunction.

Under that order issued at Beaumont the court restrains Eugene Constantin and J. D. Wrather, East Texas operators, from violating the railroad commission's recent conservation order setting allowable production in the large field at 75 barrels per well daily. Those men had previously obtained from a three-judge federal court a temporary injunction restraining Governor R. S. Sterling and his aides from enforcing proration against their properties through martial law. But when troops were withdrawn the railroad commission assumed control of the wells involved in the suit, and the Constantin-Wrather interests then filed an amended petition asking that the commission be similarly enjoined. It was the latter step which was counteracted by the injunction granted at Beaumont.

Following the new turn of affairs Upchurch stated Tuesday that one of the several litigants who had petitioned for court orders restraining the commission from controlling East Texas wells had announced by telephone that morning that his suit had been dropped.

Martial law rule still prevailed Tuesday on all properties in the East Texas field except those set free from the troops by federal court injunctions, and it is on those properties that the railroad commission is enforcing its conservation program. Late last week a total of 10 groups of operators had obtained injunctions driving the troops from their properties, although their success meant only the substitution of railroad commission regulation for martial law rule. Of the 10 plaintiffs some but not all then filed petitions in federal court at Tyler for injunctions against the commission.

Operators engaged in contesting proration interference through resort to federal court had become bolder recently because of recruiting new members, and had shown less apprehension than formerly that violence might result from their action. No cause for alarm existed, furthermore, because the production curb of the field remained under dual control of the militia and the commission, with the latter free to call upon armed forces in event its enforcement powers should be resisted without the protection of the courts.

Aside from the Constantin-Wrather interests, East Texas operators who have obtained injunctions against martial law regulation include the following: Peoples Petroleum Producers, Incorporated (J. E. Sedberry and K. E. Merren), T. W. Murray (M. & G. Oil Company), Alfred Macmillan and associates, North Star Oil Corporation, Imperator Oil Corporation, Arthur F. Fraf and associates, A. S. Parmer and associates, and Bill & Dave Oil Corporation.

Group Plans Concerted Action Against Texas Conservation Law

Dallas, Texas.—Preliminary plans for a federal court attack against existing proration and conservation rules of the Texas Railroad Commission now in force in the East Texas field were formulated at a private meeting of operators, and independent pipe line companies and refiners held here early last week. Most of the companies and operators that have obtained injunctions, or filed petitions in federal district court at Tyler to restrain the governor, adjutant general and commander of the Texas militia from enforcing military, or proration orders were represented at the meeting, and pledged financial support on a pro-rata basis to the lawyers who will conduct the legal fight. A restraining order against the commission is needed by the above group of anti-prorationists to obtain complete, or partial relief from proration restrictions, as every well removed by federal court order from the control of the military authorities has automatically fallen within the jurisdiction of the commission's conservation orders placed in effect February 26.

Depositions, expert witnesses and a vast volume of data are being lined up by this group of anti-prorationists to be

(*Continued on page* 45)

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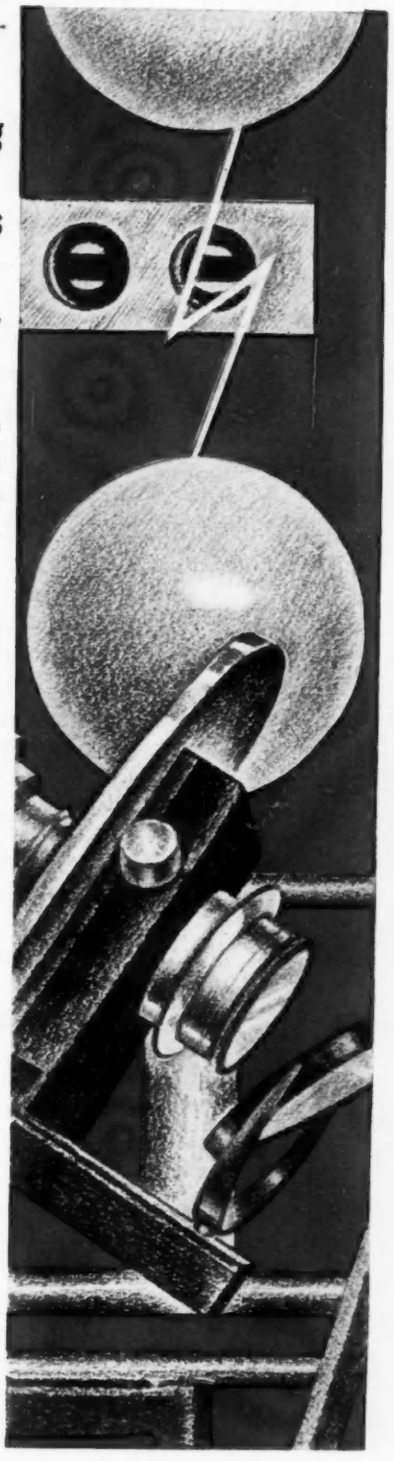

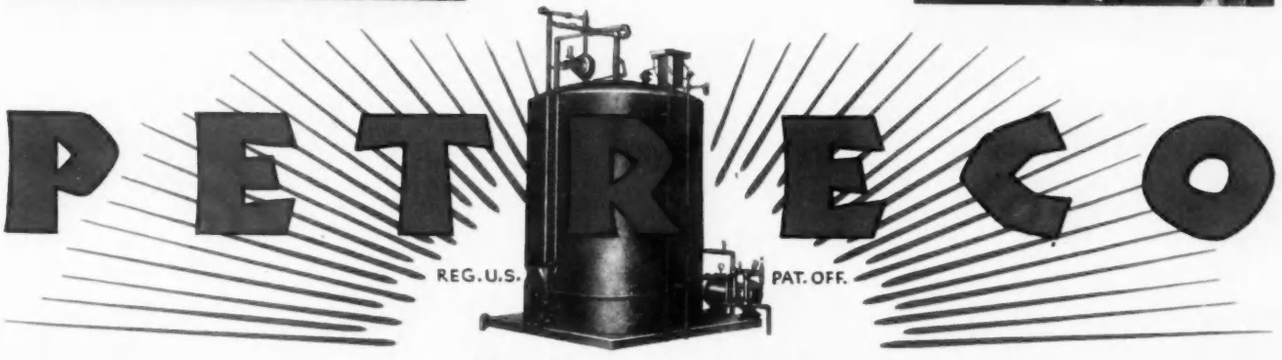

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EDITORIALS

Good Times or Bad?

UNCERTAINTY undermines confidence. Lack of confidence impedes action. Lack of action stagnates business.

Possibility of a flood of oil from any point in the United States readily accessible by railroad and pipe line facilities, at a time when there appears to be plenty of oil elsewhere, is enough to shake the market. Possibility that East Texas might break out from the control established there by military and other state authorities has created a feeling of uncertainty so great that many, feeling the strain, say "It's better to let it go and have it over with" when as a matter of fact their good judgment tells them that it should not be "let go."

Remove the uncertainty on East Texas and the oil industry will see almost an immediate improvement. Let uncertainty continue to reign and the oil business will continue in the stage of stagnation into which it has fallen.

What will happen in East Texas?

Will the courts uphold the Texas conservation law? The law was unsatisfactory enough when it was originally passed last summer, but there are many now who believe that the Texas legislature possibly enacted a law that has some strength to it—even though it was not apparent at the time that the legislature had that in mind. Possibly the reason why some think more kindly of the law is that facts are being developed on which evidence of underground waste actually can be offered. Lately we have met several new converts to this idea.

We hope that the law will have an early test. If the Texas Railroad Commission is upheld in its proration rules based on underground waste we will all see a distinct improvement in tone.

If the commission is upheld the oil industry should remember that it will be upheld on a basis of conservation—not market demand. And once the law is applied tightly on a conservation basis it can not be taken off if the market demand is raised. Don't forget that. Conservation is conservation. Waste is waste. Pipe line facilities, storage facilities and a quick market for the oil will not change the underground workings of Mother Nature nor the laws of conservation.

We have never gone in for predictions in a large way—even guessing on a horserace has always been an expensive practice for us when indulged in, but we'll risk one little prediction just this once:

If the Texas conservation law is upheld in the courts, we'll hear considerable wailing 18 months from now—and it will be accompanied by the exhaust of the engine drilling for oil—it will be accompanied by new crops of derricks in new fields—it will be accompanied by better prices for the crude product—but it will be accompanied by a sane and business-like conduct of an industry where expensive rushing has been the practice in the past.

As to a Federal Tax

From The Lamp

THERE is little justice in adding to a tax merely because it can be collected. No doubt the federal government can get substantially increased revenues if it elects to put a tax on gasoline, a field hitherto tacitly reserved to the states, and fully exploited by them. Nor is there any question as to the seriousness of the problem which confronts the administration with a deficit of $1,400,000,000 looming up.

The automobile user contributes in so many ways to the cost of government, but in such small amounts at one time, that he does not appreciate the size of his yearly bill. When the figures are assembled they are staggering and particularly so if they are set off against the earnings of the petroleum industry.

In 1931 the 48 states collected an average of more than 4 cents per gallon on gasoline sales, or a grand total of $550,000,000. Other taxes against the industry were $175,000,000. These two amounts were equivalent to 85 cents per barrel on the country's total crude oil production. The average price of the crude last year was only 67 cents a barrel.

The tax approximated 50 per cent of the wholesale value of products from the crude oil. It exceeded the total money value of gasoline f.o.b. the refineries.

What other industry is asked to stand a tax of 50 per cent of the value of its output, or 100 per cent of the wholesale value of its principal manufactured product, or 125 per cent of the value of all of its basic raw material? Yet these are the taxes actually in force in 1931; if gallonage holds up, the total will be considerably larger in 1932 without any federal levy because of some increase in state rates.

If gasoline were a luxury, the use of which might be dispensed with as a measure of economy, its heavy taxation could be borne more easily. But two gallons out of four are used by delivery trucks, taxicabs and buses. A third gallon transports passengers in socalled pleasure cars in connection with business. It is a real necessity.

There are two great problems before the treasury department. One is to reduce federal expenses, which have risen out of all reason. The other is to increase government revenues in a way to bear most fairly upon all the people. If more excise taxes must be levied (and that seems unavoidable) there is much more merit in the proposed manufacturers' sales tax of two per cent than in the suggestion of a federal gasoline levy. Since the additional revenue is needed for the general purposes of government, it should be obtained by general taxes and not by special taxes upon any one particular industry.

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32 months service with Tru-Lay as compared with 9 months service with ordinary (non-preformed) wire rope —on a Gantry Crane operated by a New Jersey Lumber Company.

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A Mining Company in Quebec reports 204,680 tons of rock and waste handled with Tru-Lay—as compared with 95,940 tons with ordinary (non-preformed) wire rope.

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Rotary Drilling is a severe test of wire rope. An Oklahoma Drilling Company reports 10,000 feet drilled with Tru-Lay, 4,900 feet with ordinary (non-preformed) wire rope.

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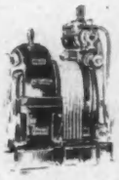

Ordinary (non-preformed) wire rope averaged, in this New York Office Building, 12 months of service. The first Tru-Lay Rope was installed during November, 1925. After 28 months of service the rope was removed for inspection. All of the wires were found in excellent condition. The test for strength was 19,500 lbs. as against a catalogue strength of 19,000 lbs.

These are a few recent service reports, chosen at random from our files. Names will be given upon request.

■ "All wire rope is alike" no longer serves as a buying guide. Industry is checking up on wire rope value . . . on work delivered per dollar. This is the reason for the almost universal acceptance of Tru-Lay Preformed Wire Rope.

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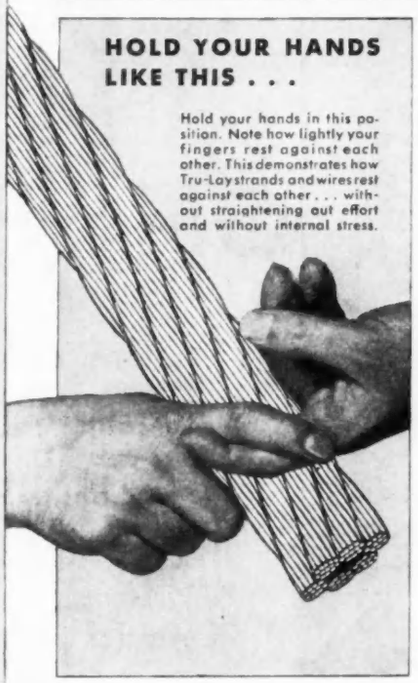
THE REASON IS ELIMINATION OF INTERNAL STRESS



HOLD YOUR HANDS LIKE THIS . . .

Hold your hands in this position. Note how lightly your fingers rest against each other. This demonstrates how Tru-Lay strands and wires rest against each other . . . without straightening out effort and without internal stress.

Internal stress in wire rope causes early fatigue and premature failure. In Tru-Lay Preformed Wire Rope internal stress is eliminated because wires and strands are helically shaped, so they fit naturally and unstressed. They lie in position relaxed so that each wire and strand is free to carry its share of the load.

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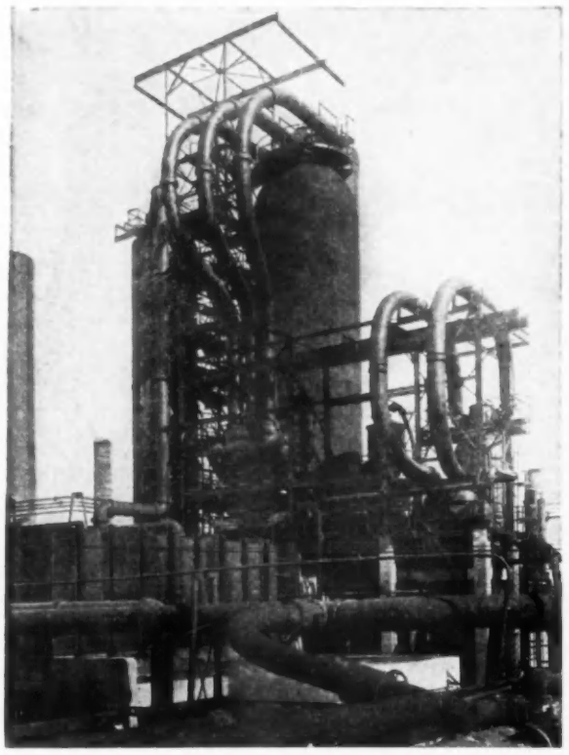

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New Calculation Method Shows Ultimate East Texas Yield

By W. P. JENNY
Geologist and Geophysicist

THERE exists still a great discrepancy in the opinions of geologists regarding the ultimate yield of the Etex-field. The figures vary from 1-2.5 billion barrels, all according to the inclination of the individual geologist to use the per-acre-yield of the Van, Powell, Richland, Mexia or any other Woodbine field for the different areas or the whole of the Etex field; other more direct methods did not lead to a closer agreement.

The procedure used in the following estimation should be more independent from individual inclinations and makes it possible to easily control and change any disputed assumption and to delimit the possible maximal and minimal yields.

The following two cross-sections through the field may well be considered as the two average cross-sections generally agreed upon:

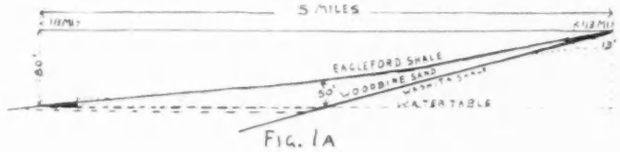

FIG. 1A

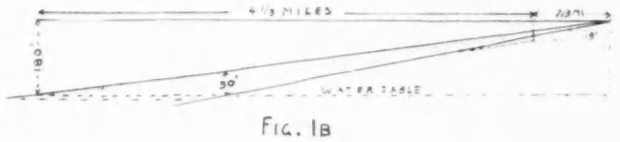

FIG. 1B

In Figure 1a. the watertable underlies about half, in Figure 1b about one-third of the field.

For further consideration it is immaterial which cross-section we favor because evidently the area of both cross-sections is the same, i.e., half the height of 50 feet times the base of slightly over five miles.

If we assume that the one or the other of these average cross-sections holds true for the length of 33 miles of the field, we may figure that the total volume of this triangular prism amounts to 19.6 billion barrels, or, for our further considerations, nearly 20 billion barrels, below a surface of about 107,600 acres.

The excess of about 15 per cent over the actually known productive acreage of the field corresponds to a strip two-thirds mile wide and 33 miles long. This excess strip may be used to cut off the extreme corners of the triangular sections and the area of these corners used to thicken the sand section of the extreme ends of the remaining cross-sections, as shown in the two figures.

The 33 miles long prism, which corresponds to either of the two new cross-sections, has still a volume of 20 billion barrels, but underlies only 93,400 acres.

If we assume now that this prism contains pure sand with a maximal porosity of 25 per cent or a minimal porosity of 15 per cent, and that the recovery of oil would amount to a minimum of 30 per cent, or a maximum of 50 per cent of the total oil content of this reservoir, we arrive at the following figures for the possible ultimate Etex yields:

Total volume of oil-bearing layer...	20*			
Porosity	25%		15%	
Maximal oil content	5*		3*	
Recovery	30%	50%	30%	50%
Recoverable oil	1.5*	2.5*	0.9*	1.5*

*Billion barrels.

The thus estimated yield would range from a minimum of 0.9 to a possible maximum of 2.5 billion barrels.

To assume a pure sand body, a porosity of 25 per cent and a recovery of 50 per cent is decidedly a too optimistic combination and has here been taken into consideration for the only purpose to demonstrate on a mathematical basis, how favorable a combination would be necessary to obtain an ultimate yield considerably above two billion barrels.

It is general knowledge that the sand body contains considerable shale; a recovery of 40 per cent, even with improved lifting methods, should be considered a fair estimate; a porosity of 20 per cent would correspond more closely with experiences in other areas and would also be better justified, if we consider the age, depth and close contact with shale bodies of the Woodbine sand. The fine material forming the shales may reasonably be assumed to fill up a good percentage of the larger pores of the sand body.

Though there is a considerable difference in the estimate of shale content, even the lowest figures assume in the average about 25 per cent shale to 75 per cent sand. These shales are of course imbibed with oil, but the yield from them may practically be neglected on account of the strong adhesion of the oil contained in the fine pores of the by now consolidated shales. Due to pressure changes some of the oil contained in the shales might migrate into the sand, this amount should however not exceed two per cent of the volume of the shale body.

If we thus assume a total volume of 20 billion barrels, a sand-shale ratio of 3:1, a porosity of the sand of 20 per cent, a recovery of 40 per cent, we arrive at a reasonable ultimate yield of the Etex field of 1.2 billion barrels.

If we substitute A. I. Levorsens figures, mentioned in his paper "Geology of the East Texas Field" (*International Petroleum Technology*, June, 1931), for our estimate, i. e. 65 per cent sand to 35 per cent shale and a pore-volume of the sand of 18 per cent, we arrive, with an initial total volume of 20 billion barrels and a recovery of 40 per cent, at an ultimate yield of 0.936 billion barrels.

To both figures might be added from 0.1 to 0.2 billion barrels as due to the shales contained in the sand body.

On the base of the above assumptions we therefore come to conclusion that the ultimate yield should lie between 1-1.4 billion barrels, which means an average per acre yield of from 10,000 to 15,000 barrels.

Some Experiments
On the Behavior of Natural Gas in an
Oil-Sand Reservoir

By IONEL I. GARDESCU

IN connection with some of the experiments carried out by the writer on the behavior of gas and oil in a sand reservoir, an interesting phenomenon was observed which may throw some new light on the problem of recovery of oil from a natural reservoir. The experiments are intended to show the effect of the surface area of the occluded gas masses, originally present in a reservoir, on the further evolution of gas from the oil and its consequent effect upon the rate of production of oil.

This paper was presented before the American Institute of Mining and Metallurgical Engineers, New York Meeting, February, 1932. Mr. Gardescu is Geologist and Petroleum Engineer, Oil and Gas Department, University of Pittsburgh, and publication of the paper is by permission of the Research Department of the Gulf Companies.

THE apparatus used in the experimental work is shown in Figure 1. It consists primarily of a sand reservoir R and a displacement chamber D, which is used to induce small variations in volume. The reservoir and displacement chamber form a unit, and a lowering of the plunger D is equivalent to increasing the volume occupied by the oil and gas in the reservoir.

The reservoir was first filled with dead oil and maintained under pressure until it was ascertained that most of the free gas had gone into solution. The volume of free gas present in the reservoir was computed from the coefficient of compressibility of the fluids by means of the displacement chamber D, reading to 0.005 c.c. and a special gage J reading to 0.02 pounds per square inch. The oil was saturated with gas under pressure, in reservoir S by circulating the oil for a long period of time through the gear pump B. Subsequently, the saturated oil was circulated through the sand reservoir following the circuit S_6, B, S_5, R_4, the sand reservoir R, R_1 R_2, F_4, F_1, back to reservoir S.

In the following experiments the sand reservoir R was filled with gas-saturated oil at a pressure of 415 pounds per square inch with no free gas present. This was ascertained by closing off all the outlet valves and determining the coefficient of compressibility of the system by means of the displacement chamber D.

Much difficulty was encountered in eliminating all of the free gas masses from the oil reservoir. The dead oil originally present in the reservoir was subjected repeatedly to great variations in pressure, ranging from vacuum conditions to 2000 pounds per square inch, and these operations were extended over a period of several weeks until all of the free gas was either eliminated or absorbed by the oil.

Experiment 1.—After the reservoir was filled with oil saturated with gas at 415 pounds per square inch, the plunger D was lowered, thereby increasing the volume of the reservoir and consequently lowering its pressure. An increase of volume of the oil of 1.8 c.c. caused a drop of pressure from 415 to 300 pounds per square inch. Without any further change in volume, the pressure seemed to remain stationary at 300 pounds per square inch. An increase in volume of 1.8 c.c. represented approximately the compressibility of the oil in the reservoir from 300 to 415 pounds per square inch pressure and the reservoir acted as if it were filled with dead oil.

All pressures referred to in these experiments are reservoir pressures, which are uniform throughout the reservoir because of the very low rates of flow involved.

Several determinations were made with the oil in the reservoir completely saturated at 415 pounds per square inch pressure. Further experiments will show that the reason that gas did not come out of solution was the absence originally of any free gas in the reservoir.; not a deficiency of saturation. In other words, at 300 pounds per square inch the oil was present in the reservoir in a condition of supersaturation and was holding more than 27 per cent excess gas in solution above saturation.

The reservoir originally was void of free gas masses, and the only way the gas could come out of solution was by forming gas bubbles. The pressure inside a gas bubble is greater than that of the surrounding oil and is expressed by the relation $2T/R$, where T is the surface tension of the gas-oil interface and R is the radius of the bubble. As the original bubble necessarily is very small when first formed, the excess pressure $2T/R$ is very large. According to Boyle's law the concentration of gas molecules is proportional to the pressure; therefore the concentration of gas molecules inside a small gas bubble also is very large. If the oil in the reservoir at 300 pounds per square inch were brought in contact with a large mass of gas of 300 pounds pressure, undoubtedly the excess gas held in solution by the oil could diffuse readily into the large gas mass; but with the small gas bubbles the excess concentration of gas molecules in the oil is not sufficiently great to compensate for the greater excess of concentration required for the formation of small gas bubbles. However, the value of the excess concentration in the small gas bubbles, equal to $2T/R$, may be reduced by lowering the value of T. This is exactly what occurs, for it is around small solid particles (nuclei) which tend to lower the surface tension of the oil that gas bubbles are able to form. Even under these conditions, the oil

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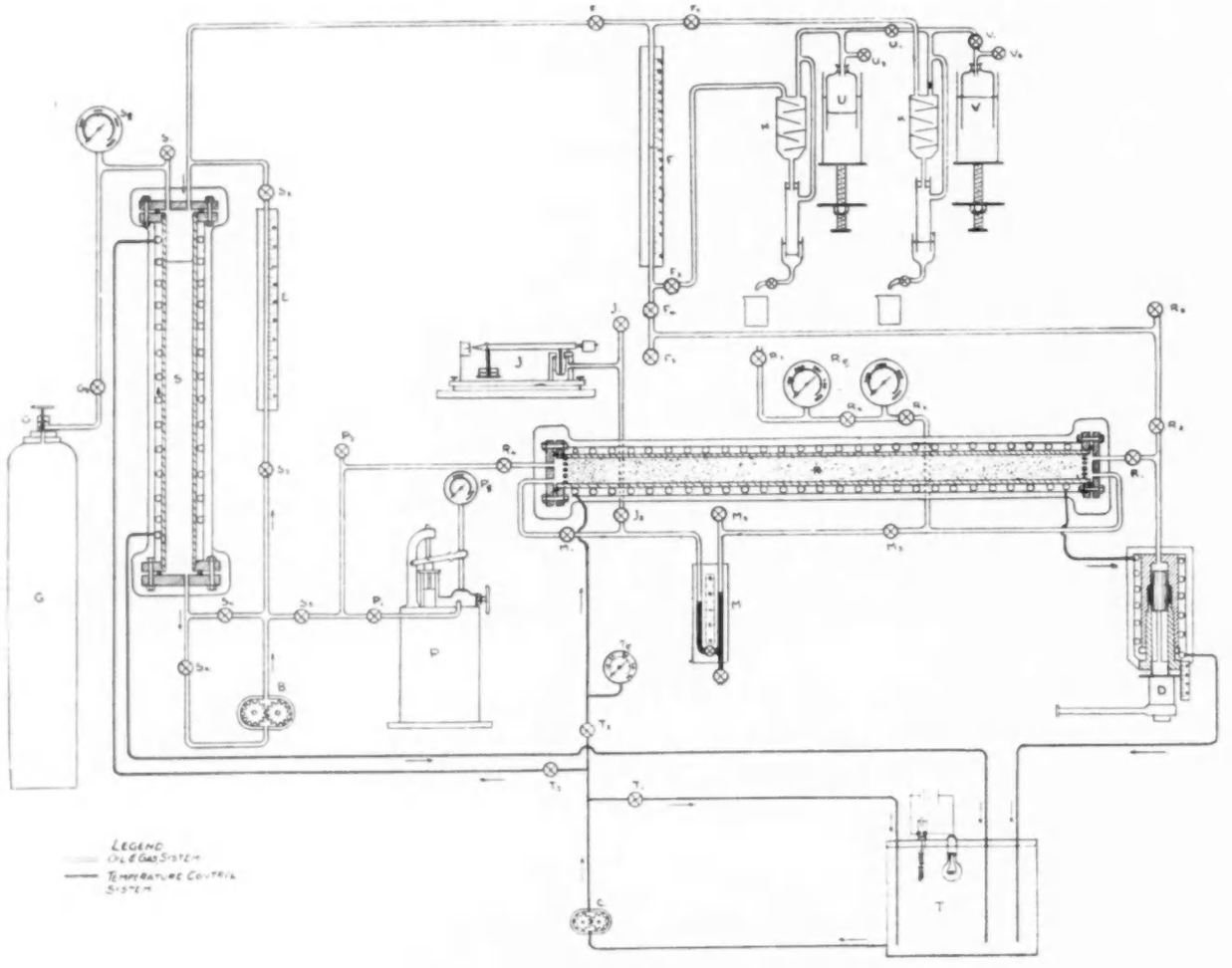

FIGURE 1
Apparatus for Study of Behavior of Free Gas in Oil-Sand Reservoir

has to reach some degree of supersaturation, depending on the nature of the nuclei, before any free gas bubbles can form.

After lowering the pressure in the reservoir from 415 to 300 pounds per square inch, presumably a few gas bubbles did form in the reservoir around a few nuclei, but because of their small size they could not be detected at first.

After a bubble has been formed, gas will continue to diffuse from the oil into the bubble, the rate of diffusion being proportional to the concentration of gas in the surrounding oil and the surface area of the interface along which the diffusion takes place. At first, the gas bubbles are small and their surface is small. Consequently, the rate of diffusion of gas into these bubbles is small, but as the bubbles increase in size, their surface area is increased and therefore the rate of evolution is greater.

In order to maintain the pressure of the reservoir at 300 pounds per square inch it was necessary to remove some of the oil gradually in order to compensate for the gas evolved in the reservoir, since the total volume of oil and free gas had to remain the same. Therefore the amount of oil removed from the reservoir, while maintaining a constant pressure of 300 pounds per square inch, represents the volume of free gas developed in the reservoir. Flow curve 1, Figure 2, shows the rate of evolution of gas and consequently the rate of recovery of oil from the sand reservoir in experiment 1. The rate of evolution of gas was very small at first and increased gradually for 3½ hours, at which time it reached a maximum of nearly 1 c.c. per minute. After this the rate started to decline because of the exhaustion of gas from the oil surrounding the individual gas masses. During all this time the reservoir pressure was maintained at a constant pressure of 300 pounds per square inch, and the resulting flow of oil was due solely to the displacement of oil by gas bubbles, which resulted from the gradual evolution of gas from the supersaturated oil.

The condition of supersaturation was induced by lowering the pressure of the gas-saturated oil from 415 to 300 pounds per square inch. The operation was not accompanied by any sudden evolution of gas because of the lack of gas-oil interface along which the evolution of gas could have taken place.

Experiment 2.—After filling the reservoir with oil saturated with gas at 415 pounds per square inch, as in experiment 1, the pressure in the reservoir was lowered to 20 pounds per square ich by lowering the plunger *D* and removing nearly 8 c. c. oil from the sand reservoir. Without any further change in volume, the pressure in the reservoir started to build up, and within a few minutes the pressure was as high as 300 pounds per square inch and showed a tendency to increase further. At this point more oil was withdrawn through the displacement chamber *D* in order to maintain a constant pressure in the reservoir of 300 pounds per square inch.

The lowering in pressure from 415 to 20 pounds per square inch created a high degree of supersaturation of the oil, and consequently a great number of gas bubbles were developed. Although the total volume of these bubbles was only 8 c. c. their surface was very large, because of their large number, and afforded a high rate of evolution of gas. As these bubbles increased in size the rate of evolution of gas also increased, but the decline started sooner than in the previous experiment

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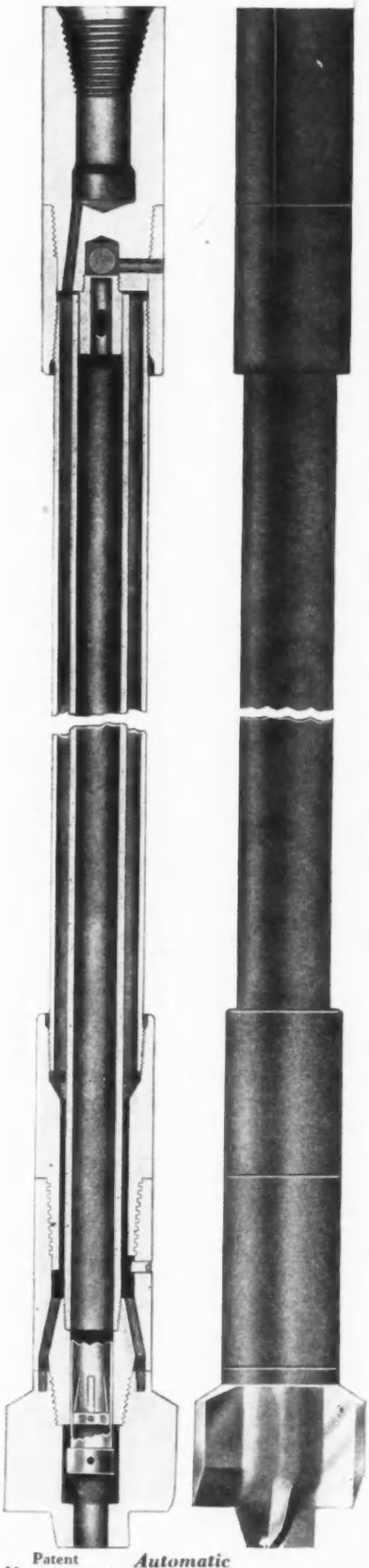

Patent No. 1,505,346 *Automatic Core Barrel*

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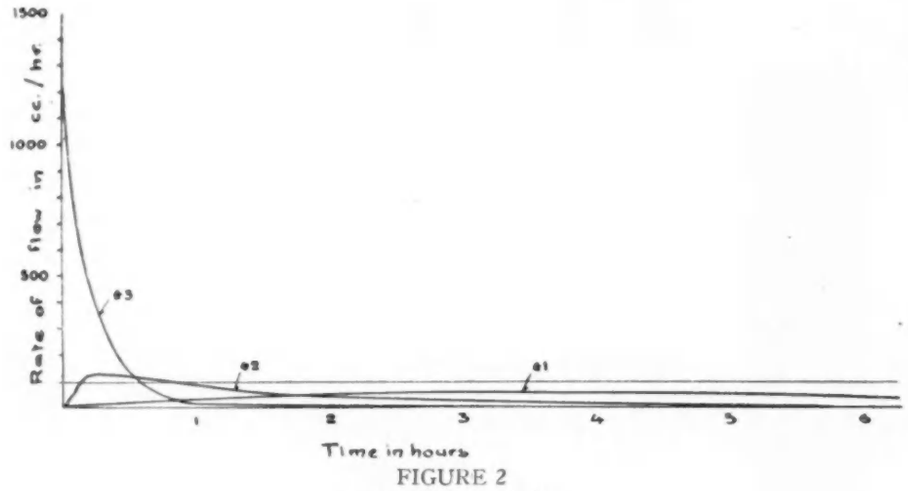


FIGURE 2
Rate of Flow of Oil

and was more rapid because of an earlier exhaustion of gas from the surrounding oil. Flow curve 2, Figure 2, shows the results of this experiment.

Experiment 3.—After filling the reservoir with oil saturated with gas at 415 pounds per square inch, the pressure in the reservoir was lowered to 20 pounds per square inch as in experiment 2. However, instead of letting the gas come out of solution and form bubbles around selective nuclei, after the oil was brought to a state of excessive supersaturation the reservoir was mechanically agitated by hitting it with a hammer. An almost instantaneous evolution of gas took place, which brought the pressure of the reservoir back to nearly 415 pounds per square inch in less than one minute. Because of the great number of gas bubbles produced and their very large surface, the evolution of free gas was very rapid against the reduced pressure of 300 pounds per square inch. As a matter of fact, for the first few minutes the pressure in the reservoir could not be lowered to 300 pounds per square inch without causing a by-pass of gas due to the decided tendency of the gas to come out of solution. The increase in rate of flow was very rapid and the peak of production very high. The decline of production soon followed because of an early and rapid exhaustion of gas from the reservoir.

Field men have known for a long time that letting a well blow itself in would result in a greater rate of production. There is little doubt that an analogy exists between the blowing in of a well and the type of flow expressed by flow curve 2. The same analogy can be traced between flow represented by curve 3 and the flow of a well following shooting.

The same phenomenon illustrated in the three experiments above can be readily observed by simply removing the cap of a ginger ale bottle. If the cap is removed gently from the bottle, the evolution of gas takes place at a slow rate, but if the bottle is given a brusque shake, gas will be liberated at a high rate throughout the mass of liquid and both ginger ale and CO_2 will flow out of the bottle. If the cap is removed gently, a few gas bubbles are produced, mostly forming along the glass surface at particular points. Gas bubbles do not form at random; a gas bubble once formed begins to grow until its buoyancy is great enough to detach the bubble from the glass and force it to the surface of the liquid and soon after, at that same point, another gas bubble will begin to form, and the repeated evolution of bubbles from that point continues.

The reason the gas bubble forms at a particular point is because of a nucleus which facilitates its formation. If the ginger ale is poured into a glass not perfectly clean, the development of a very large number of gas masses on the surface of the glass may be observed. The writer believes that a similar phenomenon might occur in a reservoir. The oil may contain and generally does contain substances which would act as nuclei for the formation of gas masses. The sand surfaces also may have nuclei adhering to them. It is conceivable that two reservoirs apparently identical as to extent, porosity, oil and gas content, etc., might act very differently because the rate of evolution and the distribution of the gas masses might be different because of the character and distribution of the nuclei in the reservoir. At present no process is known which would alter the nature or distribution of nuclei in a natural reservoir, but it is possible to control the pressures in a reservoir to some extent and thereby create a condition of supersaturation which with the application of shock (shooting with nitroglycerin) might lead to the proper distribution of gas nuclei. The writer believes that a wide distribution of gas masses throughout the reservoir is essential for the efficient utilization of the energy held by the gas in solution. Some of the benefits that may result from a wide distribution of gas bubbles are summarized as follows:

1. Conservation of gas energy by minimizing the by-pass of gas.

2. Higher reservoir pressures because of a reduced degree of supersaturation.

3. Higher rates of flow and better control of flow rates by providing more interface for the release of gas from solution.

To discuss these three points fully is beyond the scope of this paper, the purpose of which is limited to demonstrating one phenomenon; namely, that by creating different distributions of gas masses in an oil sand reservoir it is possible to secure different rates of evolution of gas and consequently different rates of production of oil. The differences in distribution of gas masses were accomplished in the experimental work by causing variations in pressures and by the application of shock, both of which may be applied to a natural oil reservoir.

SECOND INSTALLMENT

The Physical Characteristics Of Mud Fluids

By RICHARD C. KERR
Los Angeles, California

MUD weight is a very difficult thing to estimate by looks or feel. Attempts to do so invariably confuse weight with "viscosity." The only way to be sure in the matter is to use scales, special mud hydrometers or mud weight recording instruments.

A mud weight recording instrument is of great value if a serious attempt is being made to control the fluid weight or to study results of fluid weights.

Such an instrument keeps the driller constantly informed as to the weight of the fluid. It allows the drilling foreman to specify the weight desired and to check the results, and it yields a permanent record that will be of value in future drilling operations in the vicinity.

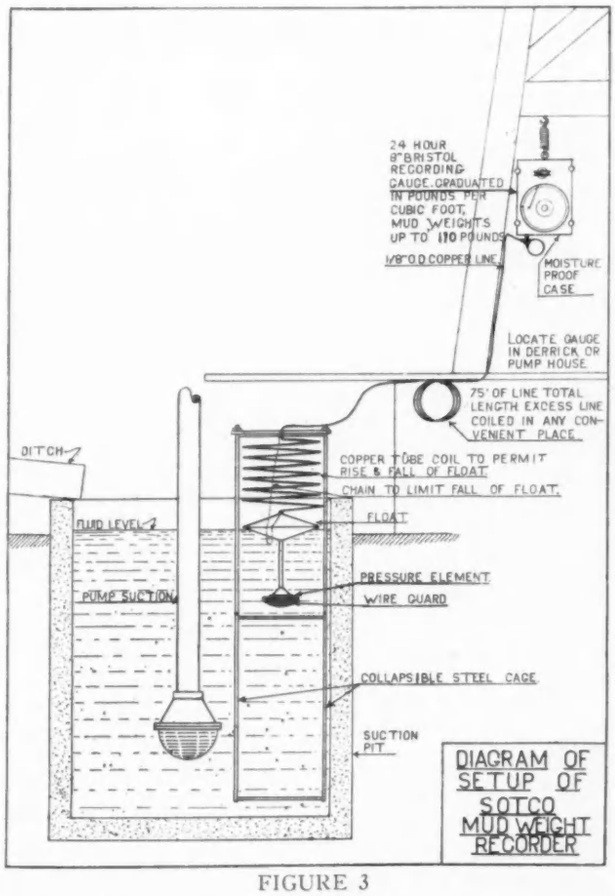
Such a continuous record should be of much greater value than an intermittent series of readings taken with bucket and scales or with other intermittently used or manually operated instruments.

The weight of the circulating fluid and unexpected change and the prompt detection of a sudden drop in weight to a low point is a very important thing in handling dangerous gas conditions. Similarly, a slow increase in weight may indicate a gradually increasing condition of fine sand loading.

Figure 3 is a diagram of the set up of an automatic mud weight recorder that has been very successfully used during the past year. The device consists of a weight element held at a constant depth of submergence by a conical float. The weight element consists of an air chamber separated from the fluid by a special designed rubber diaphragm and connected to the weight recorder by a length of ⅛-inch O.D. copper tube. When submerged the hydrostatic pressure exerted on the air chamber is dependent on the specific gravity of the fluid surrounding it. The instrument is accurate to about one pound per cubic foot mud weight and can be used in suction tank, thus measuring accurately the weight of the mud that is being pumped down the hole.

Another type of automatic mud weight indicator diverts a portion of the mud stream from the ditch, and allows this deverted portion of the mud stream to flow into a conical shaped bucket, which is thus constantly overflowing. This bucket is hung from a specially designed spring balance, and the weight is shown on a large dial at the top of the apparatus. When properly installed and serviced this instrument is capable of accurate measurement.

Ordinary hydrometers are not at all suitable for mud weight determination. There is a considerable lag in the hyrdometer reading due to the viscosity of the mud. If the hydrometer be allowed to slide gently into the mud it


24 HOUR 8" BRISTOL RECORDING GAUGE GRADUATED IN POUNDS PER CUBIC FOOT, MUD WEIGHTS UP TO 170 POUNDS
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PRESSURE ELEMENT
WIRE GUARD
PUMP SUCTION
COLLAPSIBLE STEEL CAGE
SUCTION PIT
DIAGRAM OF SETUP OF SOTCO MUD WEIGHT RECORDER

FIGURE 3

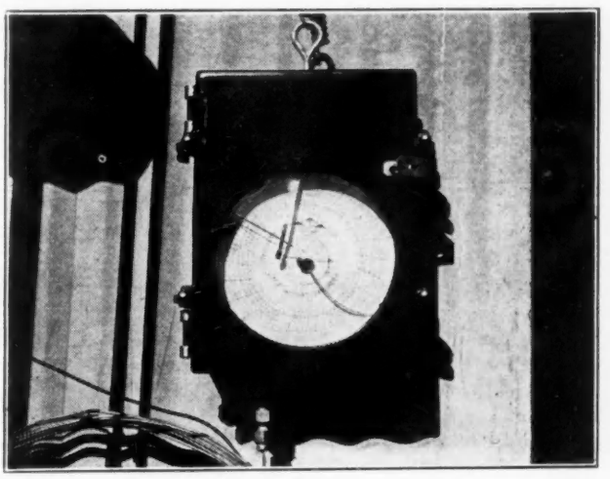


PLATE 2

Mud weight recorder in use at Kettleman Hills

will come to rest before sinking deep enough, if the hydrometer be pushed too deeply into the mud it will not rise high enough. An average of these two readings will be a rough approximation to the true reading, however.

The importance of having accurate and continuous information on the weight of the mud being circulated in the hole has been forcefully brought to the writer's attention during the past year by the field inspection of numerous charts from recording weight indicators.

In one case a deep test well was being drilled through a thick body of hard fractured shale. The interstices and fractures in this shale contained gas under high pressure but in "pockets" of small volume. This gas was giving a great deal of trouble by gas-cutting the mud, but was not of sufficient volume to actually cause a blow-out.

Trouble was encountered with caving hole, and there was the always present danger of encountering a high pressure gas sand of large volume. The drilling superintendent decided to carry his mud as heavy as possible, and in order to keep close watch on the situation, installed two mud weight recorders, as well as keeping the regular bucket and scales equipment on the job.

One weight recorder was installed at the mouth of the conductor and the other in the suction pit.

Extreme fluctuations in weight were observed, the mud in the suction pit frequently dropped from clean mud of 110 pounds per cubic foot to a 40-pound froth in a few minutes, and would then slowly climb back to 110 pounds again.

At times the discharge at the mouth of the conductor weighed only 35 pounds per cubic foot, but was of a stiff "mayonnaise-like" consistency that had every appearance of being of heavy weight. Even after passing through a coarse mesh vibrating screen and flowing through a 40-foot ditch it was still a stiff viscous froth with a weight of only 40 pounds per cubic foot.

This close watch on the mud weight enabled the drilling crew to pump the gas-cut froth into a degassing pit and to turn new, clean mud into the suction pit from the storage tanks.

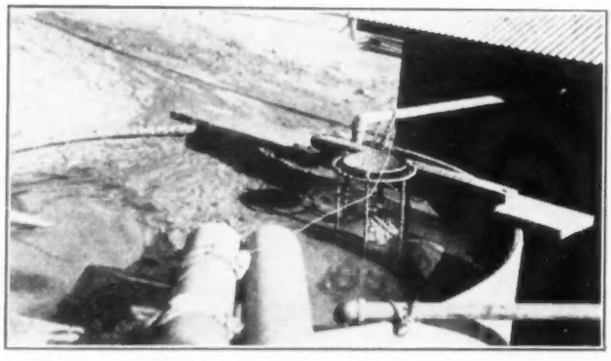


PLATE 3

Mud weight recorder, pressure element in suction pit at a Kettleman Hills well

Obtaining accurate results with a bucket and scales is not at all the simple process that it is supposed to be. The instrument must be properly constructed, adjusted and cared for and in taking a sample out of the ditch or suction pit, care must be taken not to scrape up sand or cuttings from the bottom of the ditch. A surprisingly large number of the bucket and scale sets found in the wells are inaccurate to an extent of four or more pounds per cubic foot, and if more accurate results than this are desired the following procedure must be observed:

The scales should be kept clean and well-oiled and tested at frequent intervals. The bucket should be a special narrow-necked container of definite known volume. Accurate and speedy measurements will be facilitated if the container be constructed to hold exactly one gallon, or 1/10 cubic foot as the case may require. If some other size of container is to be used a specially graduated scale should be constructed, conversion charts are unhandy, become dirty and are frequently lost. The scale should have a tare weight adjustment to eliminate the weight of the empty bucket. The bucket must be kept clean inside and out, washing out all sand or hard cake from the inside before using and taking care that as little water or sand as possible be splashed into the scales.

Buckets must be completely filled and must not be crushed or dented. Mud weight readings should be taken at frequent intervals when drilling on unexplored zones or when drilling in known high pressure gas zones.

"Looks of the mud" is no substitute for an instrumental determination of weight. Gas cutting may increase the "viscosity" of the fluid and give it an entirely false and dangerously deceiving appearance.

One man on each tour should be detailed to the job of constantly watching and weighing the mud and his results should be recorded.

Consistency

The second most important property of the mud fluid is consistency.

Thickness or fluidity of drilling mud are generally ascribed to viscosity, but as a matter of fact the viscosity of the mud is only one of the elements that causes thickness.

The term consistency has been used in a general way to denote the texture or thickness of drilling muds since the earliest discussion on the subject, but the distinction between viscosity and consistency has been somewhat overlooked in the literature and the two terms are commonly confused in field practice. Bingham[6] in 1924 proposed the term and his conclusions, summarized by Marsh[7] in a paper presented before the A. I. M. E. at Los Angeles, in 1930, clearly emphasizes this point and points out that consistency is determined by several factors. The most important factors governing consistency are viscosity, plasticity of the solid material in the mud fluid, dispersion, the liquid state, and the mechanical analysis.

The use of the term viscosity, to mean consistency, is so general and so firmly intrenched in field language that it will be impossible to absolutely refrain from its use in all field discussions.

Wider use of the terms, thick consistency and thin consistency or, thick mud and thin mud, would help materially, however, and an effort on the part of these men who do recognize the distinction to emphasize it in their discussions and in their contributions to the literature would result in a wider recognition of the true condition by the field men.

Particular emphasis should be placed on the distinction between weight (specific gravity) and consistency. The failure of certain field men to recognize that a thick mud is not necessarily a heavy mud has resulted in incalculable damage and has lost or ruined many wells.

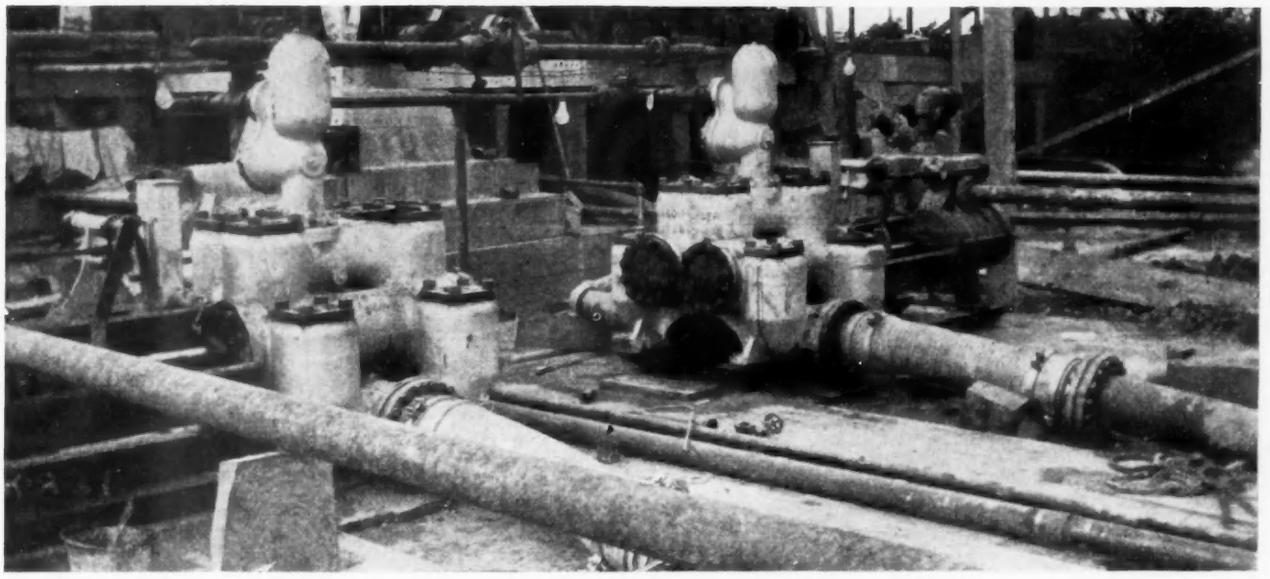
Stovall,[2] Collom,[3] and Uren[5] and many others have repeatedly stressed this point but there is still a great deal of confusion in the field practice.

Viscosity

As has been mentioned before, drilling mud fluids are not true fluids and therefore determination of viscosity must be made with the other physical characteristics of the mud fluid in mind.

Definition of Viscosity: Viscosity of a fluid may be defined

no Trouble Here



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as internal fluid friction. It is the internal molecular friction or the resistance of a fluid to changes in shape.

Units of Viscosity Measurement: Viscosity has been measused in many ways and the values recorded in many units.

The units with which the oil industry is most familiar were developed for use with oils and a list of the most common is given by Uren[8] in a discussion on transportation of petroleum.

The list and the units are as follows:

1. Absolute Viscosity and Kinematic Viscosity, given in Poises and Centipoises.

2. Redwood No. 1, Redwood Admiralty, Saybolt Furol, Saybolt Universal and Engler Time all given as Time in Seconds.

3. Engler Degrees.

The relationships of the units when used in the measurement of a true fluid are given in an excellent graphic chart in Uren's book.[8]

In the study of mud fluids the various workers have attempted to use these same units or to develop new units of their own to meet their own requirements. The result is, that it is frequently impossible to compare the results obtained by different men, and it would be of great assistance if an attempt were made to report all data in some common system.

The use of absolute centipoises would simplify a great many calculations into which viscosity enters and the general adoption of the unit for mud investigation would be a desirable change.

Measuring Viscosity

Viscosities are measured in some form of instrument known as a viscosimeter or viscometer. In most drilling mud investigations one of the two types of viscometers to be described have been used.

Flow Type Viscometer: One type of viscometer which might be called the "flow type" is typified by the funnel viscometer adopted by Harvey Lytelle and described by H. N. Marsh[7] in which the time of efflux of a given volume of the mud fluid is measured in seconds.

Since mud fluid is not a true fluid this type of viscometer gives a somewhat variable reading for viscosity. The time of efflux of the mud fluid from the flow type viscometer is determined not only by the viscosity and density of the fluid but also by the jell-forming characteristics of the mass of colloidal matter and by the size of the larger particles of sand and shale present. Uren[8] has suggested that the use of a much larger funnel and a larger quantity of mud than is ordinarily employed would yield more consistent and accurate results.

Rideal,[10] in a discussion on the measurement of viscosity in a silica jell mentions that the flow type viscometer yields values of viscosity that are widely different from the values obtained in a shear type instrument, and attributes the difference as due to a rupture of the gel fibres in the shear type instrument, while the fibres orient themselves in the stream of flow in the flow type viscometer. This orientation of long thin particles was reported by Freundlish in 1916 as being clearly visible in a sol of Vanadium Pentoxide, and the observation has been checked by many others.

The funnel type viscometer is, however, fairly consistent and yields comparative results that are of value. It can be calibrated with standard viscosity fluids and the results recorded in absolute units, accurately enough for most purposes.

The instrument must be kept clean and the outlet tube undamaged. The results must be interpreted with the other characteristics of the mud fluid kept in mind.

Shearing Type of Viscometer: The other commonly used type of instrument measure the viscous drag exerted by the mud fluid on a moving surface and is typified by the Stormer and the Mac Michael viscometers, and the swinging pendulum instruments.

This type of instrument gives a more accurate determination of the viscosity in shear and the results are readily converted to absolute centipoises.

Viscosity is somewhat easier to estimate than is mud weight and the action of the pumps gives a rough indication as to the mud viscosity.

There has recently been placed on the market a new portable type electrically driven viscometer that should be of considerable value in conducting field viscosity studies. The writer has not had an opportunity of testing out this instrument, but something of the kind is greatly to be desired and will no doubt yield a great deal of valuable data.

The device at present on the market was designed for oil viscosity measurement and consists of a small electric motor turning an impeller submerged in the fluid. Obviously the power required to turn the motor is influenced by the viscous drag of the fluid on the impeller, thus by measuring the power input to the motor a measure of the viscosity is obtained.

There is a wide difference of opinion among field men as to what is the proper viscosity, and the result has been that there have been violent discussions as to the relative merits of thick mud and thin mud. As was pointed out by S. L. Stovell[2] this controversy frequently led to much loss of time in thinning or thickening the mud between tours by each new driller, and the use of too high a viscosity has frequently resulted in great damage.

The answer to this controversy is, of course, that there is a definite time for each, and the use of very thick or very thin muds is required under certain conditions.

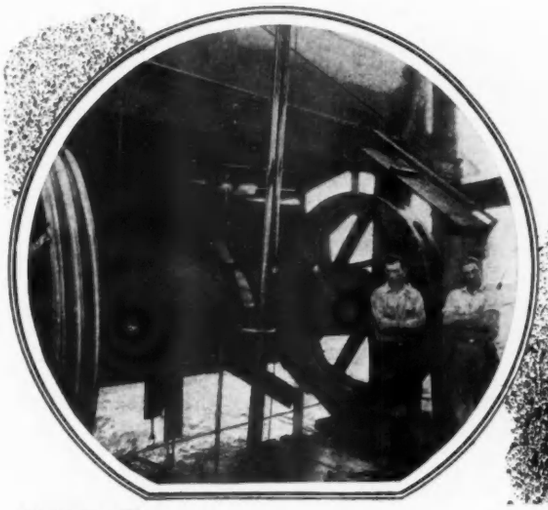
Necessity of Viscosity: The necessity of high viscosity has been over estimated in some quarters, and under most cases low viscosities are to be desired. Stovall[6] and Collom[1] have pointed this out and more recently, Doherty, Gill and Parsons[3] in an exceptionally valuable paper have clearly shown that "many of the drilling troubles which are experienced in Gulf Coast operations are directly attributable to muds of excessive viscosity."

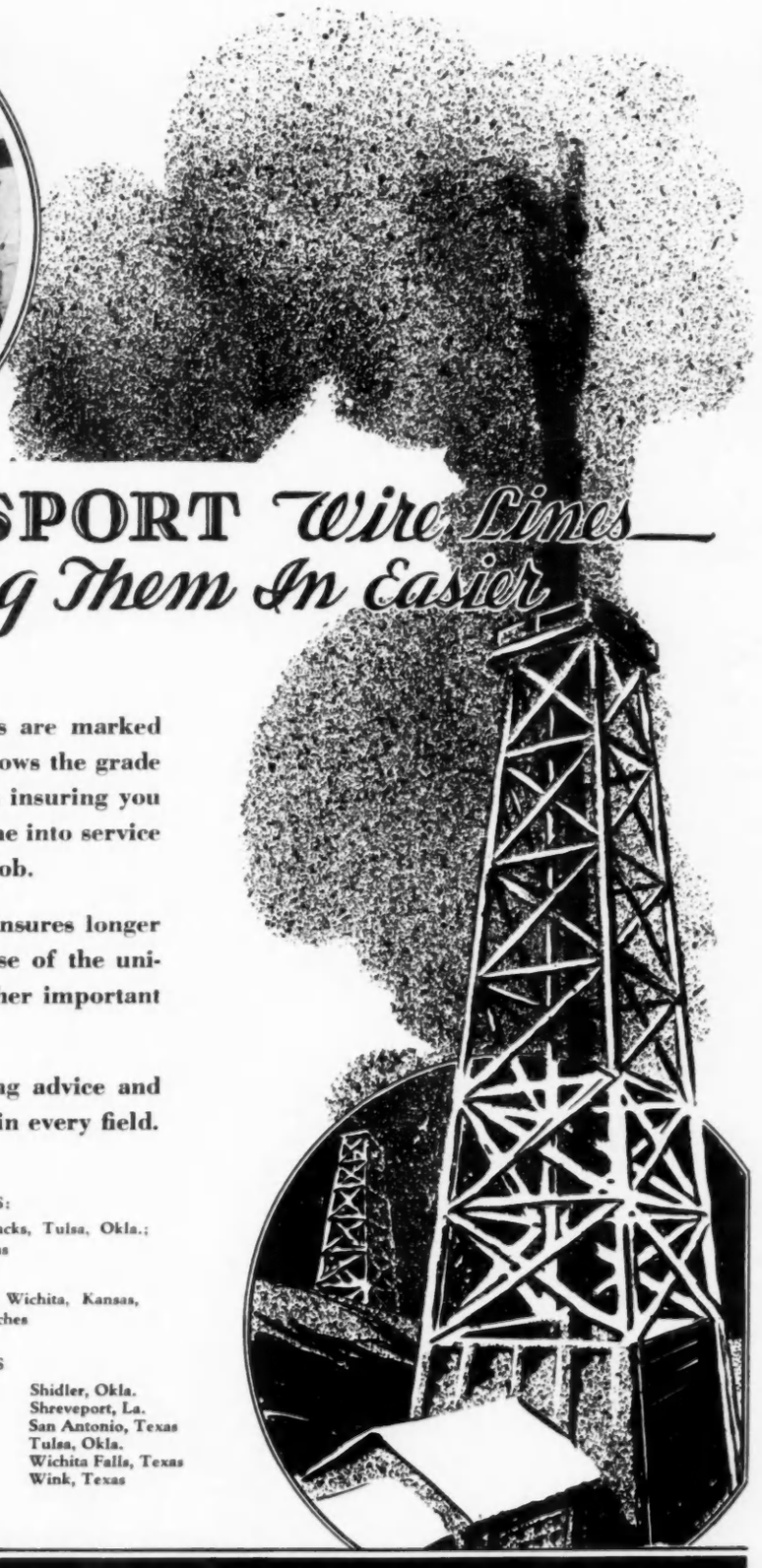
Removal of Cuttings: High viscosity aids in removing the cuttings from the hole, but it retards the dropping of these same cuttings in the ditch or settling basins.

Gas Cuttings: Highly viscous muds become badly gas cut and frequently do not lose this gas in flowing around the ditch. The result is that a highly viscous and apparently heavy froth is produced that actually is very light in weight. This froth may flow into the suction pit and be pumped back down the hole. Circulation of this froth becomes a serious matter.

Supposing a constant rate of gas infiltration into the well, under a certain hydrostatic head, the volume of gas entering the fluid during the time of circulation from the bottom of the hole to the top will lighten up the fluid column a certain amount and will lower the hydrostatic pressure on the gas reservoir, whether the gas be held in numerous, minute, tightly-held bubbles in the viscous fluid or in large free bubbles in the thin fluid, but upon reaching the surface the thin mud will loose its large free bubbles of gas and will be pumped back down the hole clean and ready to take on a new load of gas and cuttings. The thin mud after one circulation will not become progressively lighter in weight and therefore will not allow the rate of gas influx to increase.

The viscous fluid, however, will not loose all of its gas and will be pumped back down the hole already lighter in weight than it should be. This further reduces the hydrostatic head on the gas reservoir, thus allowing an increase





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in the rate of flow of gas into the hole with a resulting further loss of hydrostatic pressure on the gas reservoir.

This gas cutting of thick muds is not always easy to detect by inspection or feel, and is undoubtedly responsible for much trouble with caving holes and has caused many blowouts.

In a discussion on gas cutting by Alexander Duckham[11] of the Institute of Petroleum Technologists, London, Mr. Duckham brings out the point that there is a considerable volume of gas in the liquid state contained in the cylinder of material that is cut out by the drill bit, while drilling through an oil zone. This gas expands as it rises in the hole, expelling a considerable quantity of mud above it and thus lightens up the fluid column considerably, even without seepage into the hole from the outside.

Shell Oil Company's Williams 1 at Semitropic, California, was drilled to a world's record depth of 9700 feet, in a district that is notorious for its high gas pressure zones and bad caving hole conditions, seven previous wells in the district having been lost due to gas blow outs or caving hole. One of the most important factors that aided in the successful accomplishment of the feat, was the extreme care exercised in the selection and use of mud fluid. Drilling superintendent Penfield installed a particularly elaborate mud handling outfit, and used great quantities of fresh mud. Gas cut or sand loaded mud was discarded at once and only good mud was circulated.

Penetration

The depth of penetration of the mud into the wells of the hole is directly affected by the mud viscosity, a thin, low viscosity mud penetrating much further than a thick high viscosity mud.

In the cases of extreme porosity or lost circulation, the viscosity may well be made extremely high until normal circulation is restored, and then drilling can be resumed with a thin fluid mud.

Pump Pressures

Viscosity of the mud has a direct effect on the pumps. Viscous muds require high delivery pressures with low volume of output and larger power consumption, causing more pump repair and upkeep than do low viscosity muds.

The Limits of Viscosity

The upper limit of viscosity in drilling mud is determined by the pumps, by the gas condition and by the necessity of dropping the cuttings in the ditch.

The lower limit is hard to determine. In most cases a mud with a viscosity not much higher than water may be successfully employed. One of the major operators in California has used for years a thin highly fluid mud for all drilling conditions and has had excellent results.

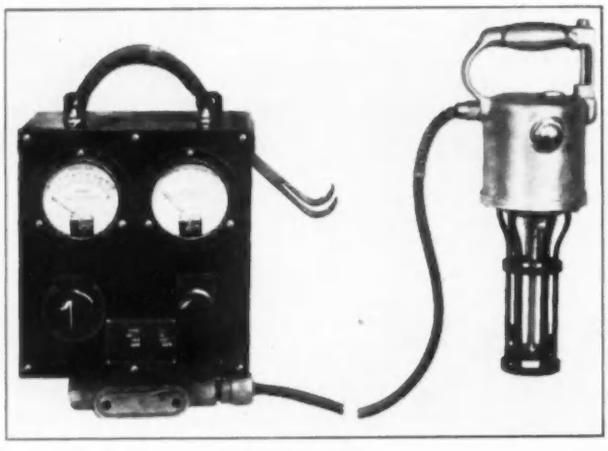

PLATE 4
Portable Electric Viscometer

Building Viscosity

In mud weight under 100 pounds per cubic foot, (13.4 lbs. / gal. — 1.61 Sp. Gr.) viscosity is a fair index of the percentage of colloidal matter present.

Four per cent by weight of pure active high grade bentonite in water will form a thick highly viscous mud with a weight of only 64 pounds per cubic foot (8.5 lbs. / gal. — 1.03 Sp. Gr.).

With the addition of inert matter to the mud the percentage of colloidal matter must be reduced in order to hold the viscosity within reasonable limits.

Four per cent by weight is then about the maximum amount of active colloidal permissible and this percentage drops off as the weight of the mud is increased until maximum

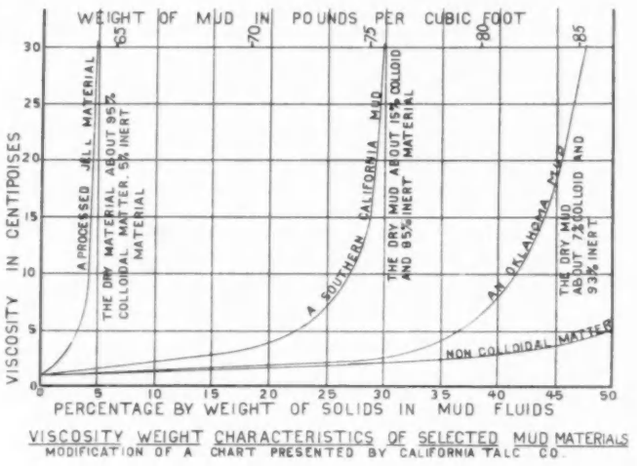
WEIGHT OF MUD IN POUNDS PER CUBIC FOOT
63
70
75
80
85
VISCOSITY IN CENTIPOISES
A PROCESSED JELL MATERIAL
THE DRY MATERIAL ABOUT 95% COLLOIDAL MATTER. 5% INERT MATERIAL
A SOUTHERN CALIFORNIA MUD
THE DRY MUD ABOUT 15% COLLOID AND 85% INERT MATERIAL
AN OKLAHOMA CLAY
THE DRY MUD ABOUT 7% COLLOID AND 93% INERT
NON COLLOIDAL MATTER
PERCENTAGE BY WEIGHT OF SOLIDS IN MUD FLUIDS
VISCOSITY WEIGHT CHARACTERISTICS OF SELECTED MUD MATERIALS
MODIFICATION OF A CHART PRESENTED BY CALIFORNIA TALC CO.

FIGURE 4

weight is obtained by the entire elimination of all active colloidal matter. Viscosity is thus easily increased by the addition of a small percentage of bentonite or good, active colloidal clay, and can be decreased most easily by thinning and then adding inert material to bring the weight to the desired value.

Figure 7 is a modification of a chart published by the California Talc Company showing the viscosity resulting from addition of certain percentages of mud materials to water.

There are chemical methods of increasing or decreasing viscosity and many such chemicals and chemical processes have been used with more or less success.

The use of chemicals should be preceded by a study of the conditions as uniform results are not always obtained. Certain muds have reactions with the chemicals used differing decidedly from others, and particularly the waters used in mixing muds have decidedly variable chemical characteristics and should be thoroughly analyzed before proceeding with chemical treatment.

[7]Hallan N. Marsh, "Properties and Treatment of Drill Mud." *Oil & Gas Journ.*, Oct. 1930. Reprinted from A. I. M. E. Bulletin, 1930.
[8]Bingham, E. C., "Viscous and Plastic Flow in Colloidal Systems." Chap. XVLL "Colloidal Behavior." A text-book, Robt. H. Bogue, Editor McGraw Hill, 1924.
[8a]"Petroleum Production Engineering," L. C. Uren, a text-book, McGraw-Hill, 1924.
[9]Prof. L. C. Uren, Univ. Calif. Dept. of Petroleum Engineering (Personal Communication.)
[10a]"An introduction to Surface Chemistry," Erick K. Rideal. A text-book, 2nd Edition, Cambridge Univ. Press, 1930. P. 241.
[11]Alexandeer Duckham, *Journal of the Inst. Petrol. Technologist*. Vol. 17, No. 89. March, 1931, "The Chemical Aspects of Drilling Mud."

This is the second installment of a comprehen ive discussion of mud fluids by Mr. Kerr, which will appear in three parts. The third and final installment deals with maintenance of viscosity, and will appear **in an early issue**

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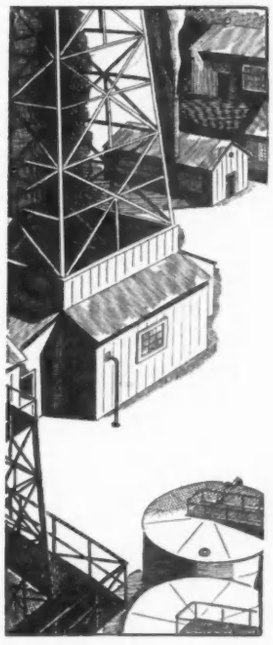

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Kessler Plan Is Plenty Hot—For Somebody

Being the letters of Paul Peebles, P. S. G., to his sweetheart, Cleopatra, at Goose Creek . . . .

My Dear Cleopatra:

Well Cleo, honey, I have got me a job which ought to last a few days and maybe keep me eating long enough to give some time to running for r. r. commissioner in Texas which I aint got very far with as to yet on account of it has got out that I am a kinder of a engineer and the people is kinder fed up on having engineers running their government. But I guess I can prove something about that. But I am going to be busy, and how. You know Andy has gone to Europe and now Amos has got married, which kinder leaves things up to me.

Paul "Hisself"

But you want to get happy with me about this new job, I know. I have been commissioned by a handsome, eloquent and courageous leader of the American oil industry to look over a new proposition that has come over from Europe. You see, honey, it is like this:

THERE is another Dutchman over in London has got a hobby. You know London is full of Dutchmen and Dutchmen is full of ideas.

Take Sir Henri Deterding, for instance, only it aint Henry like maybe you think but is French. If he was raised in Goose Creek we would all call him Hen or Henery, but in Europe they call him Sir Onree or Sir Onery, or something like that, but anyway you call him he is worse hipped on silver than Wm. J. Bryan ever was. They tell me he dont know nothing about oil no more, and all he thinks about is silver and gold, 16-to-1 and all them things. But I don't believe all I hear about that, because Sir Onery can think up enough devilment in the oil business before breakfast to keep Sir Walter and Sir Andrew hopping all day.

As I said, however, they is a side kick of Sir Henri's which has got another hobby. He has writ what he calls the Kessler Plan; and right there Mijnheer Kessler made his first mistake. He should ought to have give his plan an American name, so's we could think we was running things. You know, like the Young Plan and the Dawes Plan. If he had called it the Beaty Plan or the Franklin Plan, he might have sold it sight unseen.

I don't know what it is all about, just yet, nor neither does nobody else; but my job is to find out if they is any Bug under the Chip or any Nigger in the Woodpile.

I DON'T mean to insinuate that Sir Henri's running mate would try to slip over a fast one,—not while you was looking at him, anyway; but us Americans has got hooked on so many of these Plans, etc., that we is getting kinder leery of anything European. My client wants to be sure that America is not expected to finance another scheme for the salvation of Europe. We is all caught up on salving Europe.

WELL, the summary of the plan as it is explained to me says that the Plan has got to be financed! For that they propose to establish a Fund. There'll be more dollars in that fund than there will be shillings, guilders, roubles, bolivares and lei. This Fund was to be collected *Pro rata* from all the oil producers of the world. Now *pro rata* is Latin or Greek words, I dunno just which; but, in plain United States, they means that Uncle Sam is to fork up something like a billion dollars *per annum*, — that is some more dead language, honey, which means each and every year, — while Roumania, which sponsors the Plan, was to find something like 4% of that amount. I don't know where they is going to find that 4%, though. They tell me King Carol's tax collectors aint left that much money in the country.

Well, the idea is that those oil producers which be good and curtail their output will be rewarded out of this fund. Those that don't be good, —well, they pays, and pays, and pays. Looks like a pretty slick scheme to me. Of course, I aint knocking Kessler's racket; but I must look out for Number One. Duty may compel me to advise my client something like as follows:

THAT if he will give me about 5% of what Kessler wants,—say $200,000,000 in real money and $50,000,000 in soap wrappers or cigar coupons, I will go over to Roumania and buy up their whole oil industry and plug up the wells, like the Allies done during the Late Unpleasantness. That'd be better than prorating them, I think; and I might be able to shave a fat little commission off'n that $250,000,000.

One of the first things which Kessler,—he aint been knighted like Sir Henri, yet; but they will make him a Duke or something if he puts this one over,—one of the first things which he mentions is a Cancellation Clause. Now aint that just like a European? Well, he proposes that the United States can't cancel for five years, during which time Uncle Sam would have to shell out something like five billion dollars; but Roumania, Russia, Peru, and them other countries, they can repudiate the Plan any time they don't feel good or any time they don't get their gravy.

Well, honey, all I can say is that Uncle Sam has fell for worse Plans than this one, in times gone by, and I will let you know how it all comes out.

Your Loving Paul.

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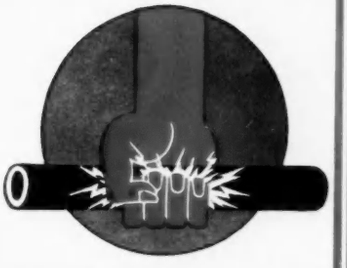

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Markets • Production • Crude Prices

H. J. STRUTH, ***Staff Economist, Houston, Texas***

Crude Demand Equalization Improved; Better Market Outlook

A better state of equalization of the crude demand appears to have been effected. Last week's supply situation recorded marked improvement in practically all producing areas east of California, resulting in a general withdrawal of oil from storage. Daily average production, amounting to 2,140,850 barrels, appeared to be about 1050 barrels a day less than total market requirements in the United States. In fact, stocks were probably drawn upon east of California to the extent of more than 38,000 barrels a day. The withdrawal appears, also, to have reached a better degree of equalization than at any time in many months. The figures at hand indicate that current supply and demand have reached a state of approximate balance, with the single exception of California, where production continues to exceed market requirements by about 37,000 barrels a day.

While production increased last week to the extent of 19,600 barrels a day, marking the second successive gain from the low point reached February 20, the changes recorded by the major producing districts were of little consequence. Oklahoma recorded a drop in production of 13,300 barrels a day, while the largest gain was recorded by Texas, outside of the Gulf Coast; a gain of 6950 barrels a day. East Texas reported an increase last week of 5150 barrels, with daily production of that area at 309,900 barrels. The only other important change in Texas was a gain of 3100 barrels a day in the Panhandle district. There, daily average production rose to 50,700 barrels.

Oklahoma operators are apparently participating in a better market situation, as a result of increased demand for Oklahoma crude. It appears that there has been a gradual equalization of buying in the Mid-Continent which has resulted in an improved tone in Oklahoma. Daily demand for Oklahoma oil has apparently turned upward to about 425,000 barrels a day, having had a marked stabilizing effect upon the market. Last week's figures would seem to indicate that demand exceeded production by about 6400 barrels. Kansas, also, has noted an improved market outlook, with demand moving upward to meet actual daily production.

Texas operators have experienced a better market situation, with purchases tending upward. With definite limits placed in effect in East Texas, any increase in market requirements will naturally benefit other Mid-Continent fields. It is believed that the producer will shortly experience a marked increase in demand for crude, which will undoubtedly be more equitably distributed than was the case when East Texas bid fair to corral all the oil market. This is an important turn for producers in areas outside of East Texas, as it means an improved market outlook for many operators that have suffered severely from the earlier rush to buy the cheap oil. Stabilization of prices has done much to alleviate conditions and as long as effective control is held over East Texas there is every reason to believe that other areas will be granted a larger share of the crude demand than was possible last year. This offers a most encouraging outlook for the producer and may mark the beginning of better times and higher crude prices.

Holding back East Texas production will not only improve market conditions in other fields but is bound to improve the financial aspects of the East Texas producer, as well. Once it is definitely established that legal measures of control can be maintained, market demand will become so distributed as to sustain an advancing price structure. If last week's figures are any criterion of the immediate outlook, there is every likelihood that higher crude prices are not far away.

Still Runs Drastically Reduced; Gasoline Stocks Down

Drastic curtailment of refinery still runs was recorded last week, when there was a reduction in daily average throughput of nearly 200,000 barrels. This marked the first successful attempt to bring still runs down to a point below actual current market requirements for gasoline. It was rewarded by the first withdrawal of gasoline from storage in more than 15 weeks.

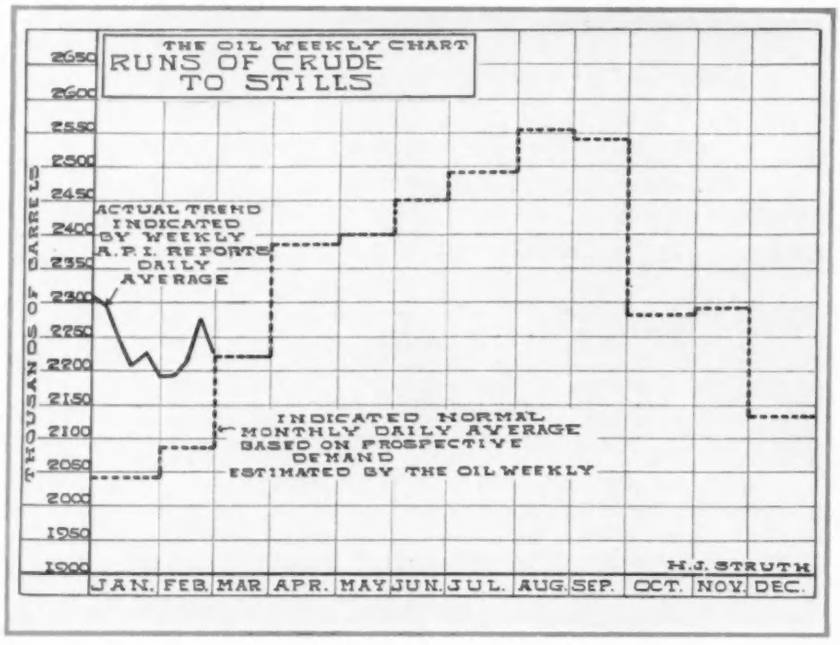
Runs to stills for last week averaged 2,036,000 barrels a day, on a Bureau of Mines' basis, as compared with 2,227,000 barrels the preceding week. Gasoline stocks were reported to the American Petroleum Institute at a total of 45,429,000 barrels, compared with 45,567,000 barrels the preceding week. This was a decline of 138,000 barrels, marking the first decrease in storage since the week of November 14, 1931.

Bureau of Mines' figures for January, 1932, show that while runs to stills were reduced about 4,000,000 barrels, stocks of gasoline rose about 4,500,000 barrels. That the increase in gasoline stocks was all due to excessive refinery operations in the United States is shown by the fact that exports of gasoline exceeded imports of that product by 2,198,000 barrels, representing a net increase in excess of exports over December of 300,000 barrels. As a matter of fact, domestic demand for gasoline declined under the December total by 3,684,000 barrels.

Slightly Improved Tone in California; Allowables Violated

A slightly more optimistic view of the crude market structure in California was taken during the week, but there was little change in either supply or demand. Virtual abandonment of curtailment by a few companies in some fields was largely offset by reductions in other fields.

At Long Beach it has not been possible to reduce the output to anywhere near the allowable. One large company and several smaller operators are far above their allotments and do not seem to be inclined to do anything about it. This inclination has been observed in other



fields and the overage has been enough to keep the state production to around 500,000 barrels.

The reduction of gas production to actual outlet requirements at Ventura Avenue should reduce the oil output by about 7000 barrels. This will eliminate gas waste in a field which has produced an excess of gas for years.

A campaign to pass the Sharkey bill is under way, with the major operators and larger independents supporting the measure, and the smaller independents opposing it. Supporters of this measure claim that it will mean the stabilization of California's greatest industry, but opponents insist that it puts the industry under the management of the state and larger companies. The "waseful" production of crude oil is prohibited by the proposed law, which will be voted on in May. E. B. Reeser, who recently made a special report on conditions to Governor Rolph, urged the adoption of the Sharkey bill.

The movement of crude and refined products from California ports during January and February corresponded closely to estimates and showed a decline over some previous years. The drop in offshore shipments has been a source of worry and was caused by general conditions and the keen competition of other producing districts.

Surplus oil has been reduced to a minimum and actual de-

Crude Runs to Stills, Gasoline Stocks and Gas and Fuel Oil Stocks

Report for Week Ending February 27, 1932

(Figures in Barrels of 42 gallons each)

District—	Potential Capacity Total	Potential Capacity (Daily) Reporting	Per Cent	Crude Runs to Stills Total	Daily Average	Per c't Operated	Gasoline Stocks (see note below)	Gas & Fuel Oil Stocks
East Coast	633,700	633,700	100.0	3,210,000	458,600	72.4	6,363,000	6,887,000
Appalachian	149,600	137,400	91.8	648,000	92,600	67.4	1,770,000	1,167,000
Indiana, Illinois, Kentucky	436,300	431,500	98.9	1,832,000	261,700	60.6	5,760,000	4,678,000
Oklahoma, Kansas, Missouri	485,700	435,200	89.6	1,426,000	203,700	46.8	3,901,000	3,297,000
Texas	838,200	765,400	91.3	3,454,000	493,400	64.5	9,424,000	10,355,000
Louisiana-Arkansas	233,100	230,500	98.9	1,068,000	152,600	66.2	1,490,000	4,034,000
Rocky Mountain	160,900	143,800	89.4	268,000	38,300	26.6	1,999,000	693,000
California	914,500	888,100	97.1	3,093,000	441,800	49.7	14,860,000	96,125,000
Total Feb. 27	3,852,000	3,665,600	95.2	14,999,000	2,142,700	58.5	45,567,000	127,236,000
Total Feb. 20	3,852,000	3,665,600	95.2	15,333,000	2,190,400	59.8	43,792,000	127,209,000
Total Feb. 28, 1931	3,730,100	3,571,200	95.7	15,863,000	2,266,100	63.5	*44,092,000	†129,145,000
Texas and Louisiana Gulf Coastal figures shown below are included in the totals of their respective districts.								
Texas Gulf Coast	532,500	531,500	99.8	2,725,000	389,300	73.2	7,478,000	7,574,000
Louisiana Gulf Coast	147,500	147,500	100.0	805,000	115,000	78.0	1,344,000	3,271,000

Note: Stocks at refineries, except in California district, which includes stocks of finished gasoline and engine distillate at refineries, water terminals and sales distributing stations and amounts in transit thereto.

* This figure is not entirely comparable with current stocks due to revisions made since original publication of this figure, for which revisions the basic information is not available by weeks. If it were possible to have made the revision, the new figure would reflect somewhat lower stocks.

†Figures of 129,145,000 barrels is comparable with previous weeks, but due to transfer in Texas Gulf Coast, of 887,000 barrels from finished gas oil stocks to unfinished oils, the figure comparable with subsequent weeks is 128,258,000 barrels.

HOW LAST WEEK'S DAILY AVERAGE PRODUCTION COMPARES WITH ALLOWABLE QUOTAS AND CURRENT DEMAND

State—	Allowable or Economic Limit	Indicated Current Demand	Daily Average Last Week	Added to or Withdrawn from Storage (Estimated)	Daily Average Since Jan. 1	Indicated Excess or Shortage Since Jan. 1 (Cumulative)
Arkansas	38,000[1]	43,000	34,000	—9,000	33,958	—587,700
California	456,000[2]	465,000	502,100	+37,100	504,093	+2,541,100
Kansas	90,000[1]	100,000	101,600	+1,600	99,526	+433,200
Louisiana	54,000[1]	63,000	55,000	—8,000	56,654	—412,450
Oklahoma	410,000[3]	425,000	418,600	—6,400	425,841	+514,000
Texas	818,000[1]	840,000	825,200	—14,800	837,216	—176,450
Balance of U. S.	202,000[1]	206,000	204,350	—1,650	204,013	—69,050
Total	2,068,000	2,142,000	2,140,850	—1,050	2,161,301	+2,242,650

[1]Economic limit based on data compiled by The Oil Weekly.
[2]Allowable set by California Proration Committee.
[3]Allowable set by Oklahoma Corporation Commission

mands may soon equal production. Few premiums have been paid this year and independent refiners have been able to purchase requirements at somewhere near the current quotations.

Th gasoline market has not been such a disturbing factor, and there is the possibility that average gasoline prices on the Pacific Coast will be higher than those which now exist.

General Improvement Noted In Mid-Continent Gasoline

General conditions throughout the Mid-Continent area have shown a gradual improvement during the past few weeks but especially has this been so during the past 15 days when buyers have shown an added interest in prices and have been requesting quotations on larger quantities than have been considered in recent months. Perhaps the outstanding improvement is the better psychological con-

Cracked Gasoline Production

Report for Week Ending February 27, 1932

(Barrels of 42 gallons)

	Potential Charging Capacity Daily Reporting			Production Daily Average	
	Total		%	Total	
East Coast	261,300	236,300	94.1	581,000	83,000
Appalachian	56,300	54,100	96.1	185,000	26,400
Ind., Ill., Ky.	330,400	315,400	95.5	528,000	75,400
Okla., Kans., Mo.	237,800	219,500	92.3	330,000	47,100
Texas	450,800	436,200	96.8	781,000	111,600
Louisiana-Arkansas	112,400	112,400	100.0	219,000	31,300
Rocky Mountain	99,900	98,400	98.5	83,000	11,900
California	190,800	190,800	100.0	381,000	54,400
Total Feb. 27	1,739,700	1,663,100	95.6	3,088,000	441,100
Total Feb. 20	1,739,700	1,663,100	95.6	3,176,000	453,700
Total Feb. 28, 1931	1,589,600	1,505,500	94.7	2,746,000	392,300

The Texas and Louisiana Gulf Coastal figures shown below are included above in the totals of their respective districts.

Texas Gulf Coast	352,400	347,400	98.6	624,000	89,100
Louisiana G. Coast	77,000	77,000	100.0	176,000	25,100

Imports of Petroleum

(Barrels of 42 gallons)

	Week Ended Feb. 27	Week Ended Feb. 20
AT ATLANTIC COAST PORTS—		
Baltimore	247,000	218,000
Boston	59,000	196,000
New York	1,150,000	[1]890,000
Philadelphia	162,000	314,000
Others	268,000	[1]332,000
Total	1,886,000	1,950,000
Daily Average	269,429	278,571
AT GULF COAST PORTS—		
Galveston District	.....	[1]59,000
New Orleans and Baton Rouge	.....	.....
Port Arthur and Sabine District	.....	.....
Tampa	.....	.....
Total	.....	59,000
Daily Average	.....	8,428
AT ALL UNITED STATES PORTS—		
Total	1,886,000	2,009,000
Daily Average	269,429	286,999
Daily Average Four Weeks Ended	237,750	228,000
Distribution of Total Imports is as follows:		
Crude	828,000	[1]1,118,000
Gasoline	480,000	68,000
Gas Oil	76,000	.....
Fuel Oil	502,000	[1]823,000
Total	1,886,000	2,009,000

[1]Revised.

California Oil Receipts

(Barrels of 42 gallons)

	Week Ended Feb. 27	Week Ended Feb. 20
AT ATLANTIC COAST PORTS—		
Baltimore	48,000	41,000
Boston	.....	.....
New York	33,000	[1]51,000
Philadelphia	.....	141,000
Others	.....	.....
Total	81,000	233,000
Daily Average	11,571	33,286
AT GULF COAST PORTS—		
Total	.....	.....
Daily Average	.....	.....
AT ATLANTIC AND GULF COAST PORTS—		
Total	81,000	233,000
Daily Average	11,571	33,286
Daily Average Four Weeks Ended	21,107	24,393
Distribution of Total California Oil Receipts is as follows:		
AT ATLANTIC COAST PORTS—		
Gasoline	81,000	[1]233,000
Total	81,000	233,000

[1]Revised.

United States Daily Average Production

1931	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Av.	United States Total
January	452,000	106,350	511,050	188,850	41,100	50,700	110,300	96,700	535,700	2,092,750	64,874,450
February	473,750	114,450	523,700	185,600	43,950	49,950	109,800	100,100	527,300	2,128,600	59,600,450
March	531,900	110,550	585,000	177,950	40,250	47,550	108,800	95,400	528,100	2,225,500	68,990,850
April	543,650	109,250	723,050	185,850	39,050	47,000	111,500	95,500	527,350	3,382,200	71,465,750
May	561,950	107,400	767,200	185,950	39,200	46,650	111,250	97,500	534,150	2,451,250	75,975,950
June	556,850	103,150	828,250	170,100	36,500	44,900	108,950	97,950	520,300	2,466,950	74,009,750
July	527,950	100,000	912,250	157,850	33,650	41,400	107,600	94,400	517,900	2,493,000	77,282,700
August	306,150	101,900	976,800	153,550	30,400	37,650	109,600	92,900	510,900	2,319,050	71,890,200
September	261,050	104,600	752,250	149,950	29,600	38,000	117,400	92,250	505,550	2,050,650	61,518,950
October	423,600	103,950	865,800	153,500	29,200	37,750	121,600	93,950	503,800	2,333,150	72,327,750
November	541,250	104,750	855,550	158,850	29,300	37,650	124,300	93,950	503,050	2,448,650	73,460,150
December	534,650	105,500	795,500	153,550	27,850	35,100	124,500	92,150	503,000	2,371,800	72,525,700
1932											
January	439,250	99,400	735,450	141,050	28,850	34,250	123,050	82,800	505,900	2,190,000	67,890,550
Feb. 6	396,100	98,050	750,950	144,300	28,350	33,500	120,350	81,400	499,700	2,152,700	15,068,900
February 13	404,900	98,850	725,100	140,200	28,700	33,550	120,900	82,600	503,500	2,138,300	14,968,100
February 20	414,150	99,300	683,700	141,300	28,500	33,500	116,050	84,250	507,300	2,108,050	14,756,350
February 27	431,900	100,250	707,850	135,850	28,200	33,850	115,400	85,550	499,200	2,138,050	14,966,350
March 5	418,600	101,600	714,800	137,500	27,900	34,000	119,600	84,750	502,100	2,140,850	14,985,950
Increase	.....	1,350	6,950	1,650	.....	250	4,200	.....	2,900	2,800	19,600
Decrease	13,300	.....	.....	.....	300	.....	.....	800	.....	.....	.....

Last Week's Daily Average Production by Districts

TEXAS	For Week Ending Mar. 5	Previous Week
Panhandle	50,700	47,600
North Texas	47,200	47,300
West Central Texas	23,600	23,650
West Texas	177,550	178,750
East Central Texas	54,850	54,600
East Texas	309,900	304,750
Southwest Texas	51,000	51,200
Texas Gulf Coast	110,400	109,700
TOTAL TEXAS	825,200	817,550
OKLAHOMA	418,600	431,900
CALIFORNIA	502,100	499,200
KANSAS	101,600	100,250

LOUISIANA	For Week Ending Mar. 5	Previous Week
North Louisiana	27,900	28,200
Louisiana Gulf Coast	27,100	26,150
TOTAL LOUISIANA	55,000	54,350
Arkansas	34,000	33,850
MOUNTAIN STATES		
Wyoming	37,450	36,900
Montana	6,200	7,700
Colorado	3,550	3,600
New Mexico	37,550	37,350
TOTAL MOUNTAIN STATES	84,750	85,550
*Eastern States	119,600	115,400
TOTAL UNITED STATES	2,140,850	2,138,050

*Includes Michigan.

Summarized Review of Field Results

State—	Completions This week	Completions Last week	Oil Wells This week	Oil Wells Last week	Gas Wells This week	Gas Wells Last week	Failures This week	Failures Last week	Initial Prod. This week	Initial Prod. Last week
Arkansas	0	0	0	0	0	0	0	0	0	0
California	5	4	3	3	0	0	2	1	1,200	2,550
Illinois	2	0	1	0	0	0	1	0	10	0
Indiana	4	0	1	0	1	0	2	0	50	0
Kansas	14	5	10	3	2	0	2	2	4,695	2,045
Kentucky	4	2	1	1	1	1	2	0	5	5
Louisiana	9	5	2	1	2	0	5	4	1,000	45
Michigan	0	5	0	1	0	0	0	4	0	20
Mississippi	0	0	0	0	0	0	0	0	0	0
New Mexico	0	1	0	1	0	0	0	0	0	21,939
New York	0	1	0	1	0	0	0	0	0	3
Ohio	17	18	3	3	10	8	4	7	10	86
Oklahoma	12	17	7	6	4	5	1	6	1,772	29,115
Pennsylvania	3	11	0	0	1	4	2	7	0	0
Texas	155	110	107	98	9	2	39	10	734,614	838,648
West Virginia	3	5	1	2	1	3	1	0	2	7
Total	228	185	136	121	31	23	61	41	743,358	894,963
Increase		43		15		8		20	.....	
Decrease		..		..		..		..	151,605	

Comparison of Permits Granted for New Wells

	For Week Ending Mar. 5	Previous Week	This Week 1931	Total This Month	This Month 1931	Total This Year	Total This Date Last Year	1931 Year Total
Arkansas	1	0	0	1	4	2	12	34
California	8	5	14	8	32	46	67	342
Louisiana	9	3	4	9	27	72	69	309
Kansas	13	8	9	13	16	91	112	475
Oklahoma	21	17	12	21	78	149	223	842
Texas	88	91	132	88	314	1,004	846	6,961
Total	140	124	178	140	471	1,364	1,329	8,963

dition which is evident in several branches of the industry. Although no intensive buying is anticipated in the immediate future, action of six major Mid-Continent refiners in advancing prices on tank car lots probably will serve to clean up a large percentage of distressed gasoline held by the smaller refiners. New quotations posted Monday, March 7, brought U. S. motor gasoline of below 57 octane, up to 3⅜ cents; 57 to 64 octane, to 3⅞ cents; and above 65 octane, to 4⅛ cents; an average increase of about three-eighths of a cent. This posting was made by Barnsdall Refineries, Skelly Oil Company, Mid-Continent Petroleum Corporation, Shell Petroleum Corporation, Empire Oil & Refining Company, and White Eagle Oil Corporation. Scarcity of crude supply in some of the flush areas, especially in the Oklahoma City district, caused independent refiners to increase prices during the preceding week.

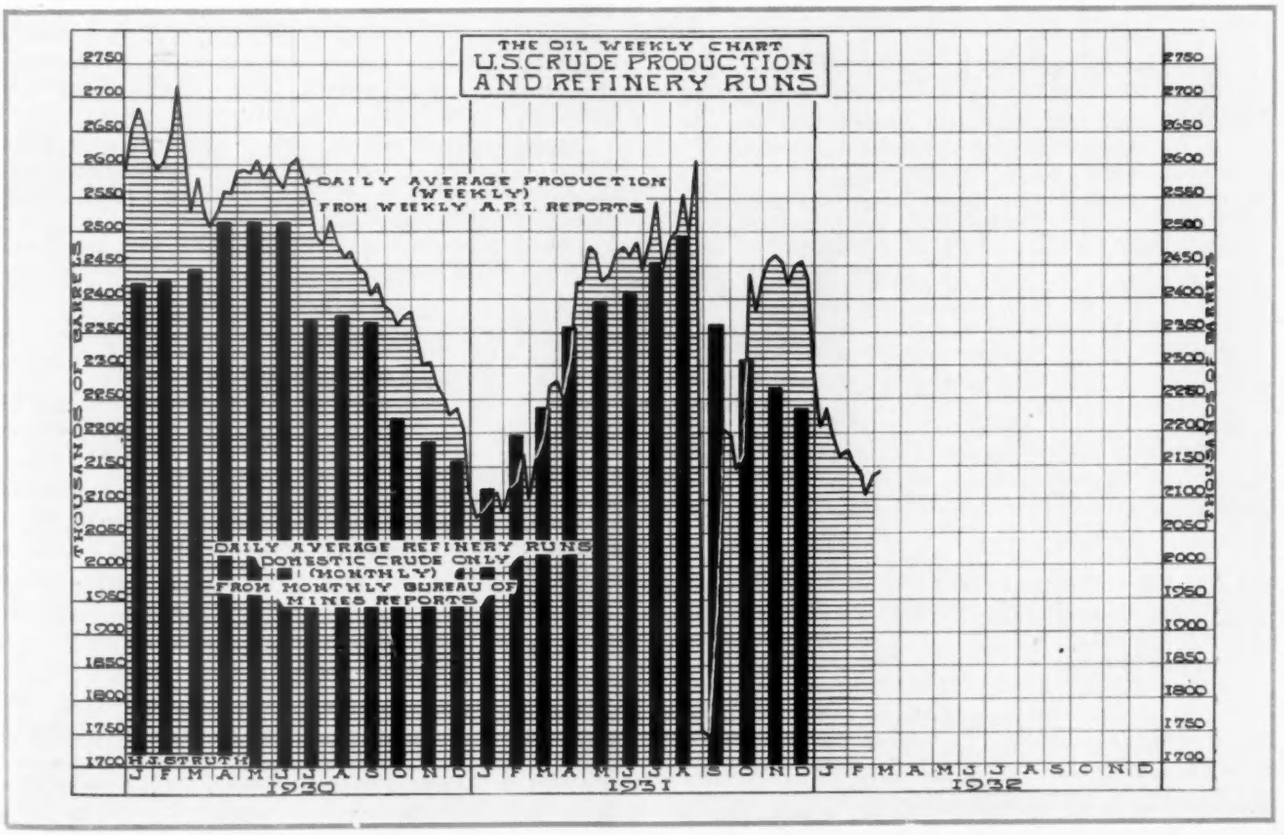
For the second consecutive week crude oil in Kansas and Oklahoma showed a net movement from storage. During the week ending Saturday, March 5, daily net withdrawals amounted to 35,600 barrels compared to 36,000 barrels daily net withdrawal during the preceding seven-day period. It is reported that three major purchasers have orders from headquarters to immediately increase their runs from Mid-Continent areas and close followers of the situation believe that much of this increase will be taken from the Oklahoma City pool. Work has been started by Oklahoma Pipe Line Company on a booster station on its line from the Oklahoma City pool. The new station, which is to be located near Wellston, in Lincoln County, will increase daily capacity from 18,000 to about 27,000 barrels daily. The Corporation Commission will hold a proration hearing on March 12, at which time it will receive nominations and set allowable production for the Oklahoma City pool for the period March 16 to 31. Allowable production for the first 15 days of the month was set at 102,000 barrels. It is not unlikely that this figure will be increased to at least 110,000 barrels for the last half of the month.

Prairie Pipe Line Shows Loss

Report for 11 months ending November 30, 1931, shows that Prairie Pipe Line Company and subsidiaries recorded a net loss after expenses, taxes and interest of $547,314. Income tax refunds were received from the government covering the years 1915 to 1928, with interest, amounting to $3,670,531. This made the surplus for the period $3,123,-217. Operating revenue for this period was $10,267,994, miscellaneous revenue $71,544 making a total of $10,339,538. Operating expenses included depreciation amounting to $4,961,938, taxes $11,420,515, income taxes, $1,304,825. The operating deficit amounted to $2,385,803. There was also a non-operating income of $1,911,509.

Eureka Pipe Line Nets $4.11 a Share

Net profits of Eureka Pipe Line Company for 1931 are reported at $205,621, or $4.23 a share on 50,000 shares of stock outstanding. This compares with a net profit in 1930 of $10,676 or 21 cents a share. The profit and loss surplus on December 31 amounted to $1,865,983, against $1,860,361 at the close of 1930. Cash on hand was $377,630, against $77,377 at the close of 1930.


THE OIL WEEKLY CHART
U.S. CRUDE PRODUCTION AND REFINERY RUNS
DAILY AVERAGE PRODUCTION (WEEKLY) FROM WEEKLY A.P.I. REPORTS
DAILY AVERAGE REFINERY RUNS DOMESTIC CRUDE ONLY (MONTHLY) FROM MONTHLY BUREAU OF MINES REPORTS
THOUSANDS OF BARRELS
H.J. STRUTH
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1930
1931
1932

Mild Winter Has Been Big Aid In Holding Up Gasoline Consumption

By ROY E. LEIGH
Associate Editor

WHEN the weather man turned the weather map upside down at the beginning of winter, he did a great service to the oil industry, as he sent snow and ice into the thinly-populated western states and gave mild open weather to the more thickly-populated central and eastern states. Sub-normal temperatures caused declines of 9.4 per cent in gasoline consumption in Washington, 5 per cent in California, 6.3 per cent in Oregon, and 6.7 per cent in Arizona; but abnormally high temperatures in all states east of the Rocky Mountains released hundreds of thousands of automobiles, trucks, and tractors, the use of which otherwise might have been prohibited or restricted, and left open thousands of miles of highways particularly secondary roads, which otherwise might have been blocked by snow.

Official figures are not yet available for January, which also was a period of high temperatures in the north and east; but the United States Weather Bureau's averages from observation stations in 37 states east of the Rocky Mountains indicate that temperatures averaged approximately six degrees higher than normal during the period October to December, inclusive. The greater abnormalities of temperature occured in the northern latitudes. The effect of these abnormalities, in many cases, was to raise mean temperatures above the freezing point during December and, likewise, it is assumed, during January and February.

Effect of Economic Depression

Students of marketing are aware of the influence which the mild winter has had on the consumption of gasoline, but its full effect is not at once apparent on consulting the statistical record of gasoline demand. The reason is that a conflicting factor also operated, the reference being to the general economic depression. If there had been no financial crisis, consumption totals might have reached a new high record for the winter period. On the other hand, if temperatures had been normal or sub-normal, something like 6,000,000 barrels of gasoline, more or less, might have remained in storage to plague the industry.

Statistics of gasoline consumption during 1931 reflect many anomalies. During January, 1931, the customary,—or slightly less than customary,—increase of 62,000 barrels per day was recorded. However, a normal increase of approximately 81,000 barrels per day customarily expected during the next four months, February to May, inclusive, did not materialize. There occured, instead, a slight decline, due, no doubt, to the effect of the depression. Strangely, however, normal increases were again recorded during the tourist season of June, July and August. September, a period of financial hysteria marked by economic crises in Europe and in Wall Street, not only failed to show the customary gain but actually recorded a substantial loss.

It was in September that the panic factor became operative again, after having been held in abeyance during the tourist season; and, if the autumn months had run true to the form of the depression and to the seasonal demand, there would have been a drop of approximately 8,500,000 barrels in the December total as compared to that of September. It is apparent that, if the depressing factors of September had not been arrested by the mild weather of Indian Summer and an open winter, consumption during the last quarter of the year might have totalled about 6,000,000 barrels less than actually happened.

A new factor, a corollary of the depression, became operative on January 1, 1932, when there was a decline in automobile registrations; and this factor must be evaluated and applied before giving consideration to the continued mild weather of January and February—mild, that is, in the populous northern and eastern states. Authorities of the automotive industry who were consulted in this connection expect a decrease in registration of passenger vehicles and an increase in the use of trucks during 1932, it being their opinion that the increase in the use of commercial vehicles will not fully compensate for the decline in automobile registration. The utilization of automotive equipment in general is expected to show little or no further increase during 1932, as a whole.

Thus, it becomes apparent that the mounting increases in gasoline demand, to which the industry has become accustomed in former years, may be lacking during the early months of 1932. In its stead, insofar as the months of January and February are concerned, there was a compensating increase in the actual current use of automotive equipment registered and in service. This was due, as explained above, to the mildness of the weather.

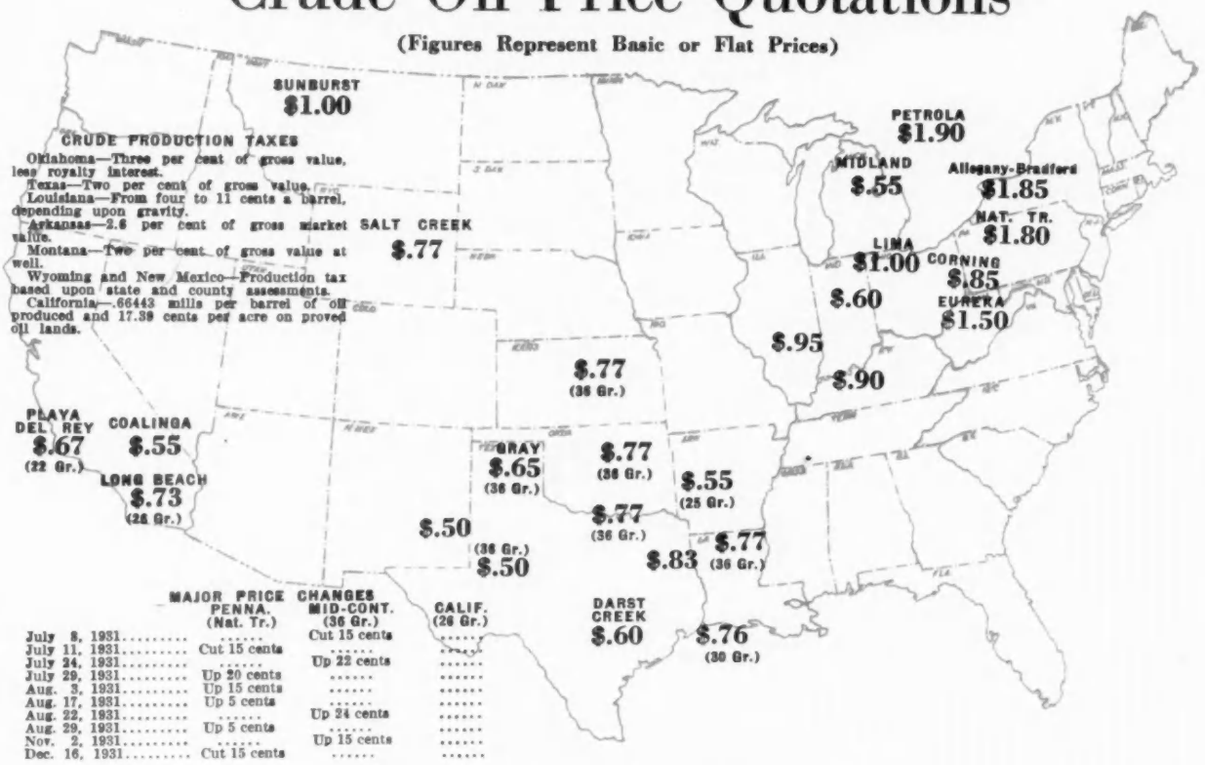
Although official figures are not yet available, reliable estimates indicate that gasoline consumption probably ranged between 27,024,000 and 27,621,000 barrels during January, 1932, which compares very favorably, all things considered, with the total of 27,037,000 barrels during the same month of last year.

Gasoline—Indicated Domestic Consumption

Months	1929	1930	1931	Daily Av. 1931
January	22,821,000	25,117,000	27,037,000	872,200
February	22,777,000	25,984,000	25,933,000	925,100
March	27,273,000	30,361,000	30,524,000	984,600
April	32,001,000	33,945,000	33,181,000	1,106,000
May	34,452,000	35,932,000	35,662,000	1,150,400
June	32,877,000	35,301,000	38,559,000	1,285,300
July	37,112,000	37,884,000	39,356,000	1,269,500
August	37,648,000	37,116,000	39,290,000	1,267,400
September	34,336,000	37,332,000	36,663,000	1,222,100
October	32,916,000	31,661,000	34,765,000	1,121,500
November	31,366,000	30,537,000	30,474,000	1,015,800
December	26,890,000	28,885,000	30,452,000	982,300
Totals	372,469,000	390,055,000	401,866,000	1,101,000

Crude Oil Price Quotations

(Figures Represent Basic or Flat Prices)



MAJOR PRICE CHANGES

	PENNA. (Nat. Tr.)	MID-CONT. (36 Gr.)	CALIF. (26 Gr.)
July 8, 1931	.....	Cut 15 cents	.....
July 11, 1931	Cut 15 cents	.....	.....
July 24, 1931	.....	Up 22 cents	.....
July 29, 1931	Up 20 cents	.....	.....
Aug. 3, 1931	Up 15 cents	.....	.....
Aug. 17, 1931	Up 5 cents	.....	.....
Aug. 22, 1931	.....	Up 24 cents	.....
Aug. 29, 1931	Up 5 cents	.....	.....
Nov. 2, 1931	.....	Up 15 cents	.....
Dec. 16, 1931	Cut 15 cents	.....	.....

Official Postings and Differentials

(Revised to March 8, 1932)

California: (Effective June 19, 1931.)

Signal Hill, Seal Beach and Alamitos Heights: 14 to 22.9 gravity 65 cents; 23 gravity 67 cents with differential to two cents for each degree upward. Top price for Signal Hill, 30 gravity, 81 cents; top price Seal Beach and Alamitos Heights, 27 gravity, 75 cents.

Huntington Beach: 14 to 21 gravity, 65 cents; 22 gravity, 66 cents with differential of two cents for each degree upward. Top price, 27 gravity, 76 cents.

Inglewood: 14 to 19.9 gravity 65 cents; 20 gravity 66 cents with differential of two cents for each degree upward. Top price, 25 gravity 76 cents.

Playa Del Rey: 19 to 20.9 gravity 65 cents with differential of one cent for each degree upward. Top price, 25 gravity, 70 cents.

Olinda and Brea Canyon: 14 to 19.9 gravity 65 cents; 20 gravity 66 cents; 21 gravity 67 cents; 22 gravity 68 cents with differential of two cents for each degree upward. Top price, 28 gravity, 80 cents.

Coyote Hills: 14 to 22.9 gravity 65 cents; 20 gravity 66 cents; 21 gravity 67 cents with differential of two cents for each degree upward. Top price, 28 gravity, 79 cents.

Santa Fe Springs: 24 to 26.9 gravity 65 cents; 27 gravity 68 cents; 28 gravity 71 cents; 29 gravity 73 cents; 30 gravity 75 cents; 31 gravity 78 cents; 32 gravity 80 cents; 33 gravity 83 cents; 34 gravity 85 cents; 35 gravity and above 87 cents.

Whittier, La Habra and Montebello: 65 cents a barrel.

Torrance: 14 to 21.9 gravity 65 cents with differential of one cent for each degree to 25 gravity and two-cent differential for 25 gravity. Top price, 25 gravity, 70 cents.

Richfield: 14 to 20.9 gravity 65 cents; 21 gravity 66 cents with differential of two cents for each degree upward. Top price, 25 gravity, 74 cents.

Elwood: 33 gravity 79 cents; 34 gravity 81 cents with differential of three cents for each degree upward. Top price, 36 gravity, 87 cents.

Newhall, McKittrick and Kern River: 55 cents a barrel.

Midway-Sunset, Elk Hills and Buena Vista Hills: 14 to 21.9 gravity 55 cents; 22 gravity 56 cents; 23 gravity 58 cents; 24 gravity 61 cents; 25 gravity 64 cents; 26 gravity 66 cents; 27 gravity 68 cents; 28 gravity 71 cents; 29 gravity 74 cents; 30 gravity 76 cents.

Lost Hills: 14 to 20.9 gravity 55 cents; 21 gravity 57 cents; 22 gravity 59 cents; 23 gravity 60 cents; 24 gravity 62 cents; 25 gravity 64 cents; 26 gravity 66 cents; 27 gravity 67 cents; 28 gravity 69 cents; 29 gravity 71 cents; 30 gravity 72 cents.

Coalinga: 14 to 24.9 gravity 55 cents; 25 gravity 57 cents.

Wheeler Ridge: 55 cents a barrel.

Athens, Dominguez and Rosecrans: 24 to 24.9 gravity 69 cents with differential of two cents for each degree upward. Top price, 34 gravity, 89 cents a barrel.

Oklahoma, Kansas, North Texas (Effective January 8, 1932).

Below 29 gravity; 61 cents, with differential of 2 cents for each degree to 40 gravity and above which is posted at 85 cents.

Texas Panhandle: (Effective November 2, 1931)

Gray County: Below 35 gravity: 61 cents, with differential of 2 cents for each degree to 40 gravity and above which is posted at 73 cents.

Carson and Hutchinson Counties: Below 35 gravity; 56 cents with differential of 2 cents for each degree to 40 gravity and above which is posted at 68 cents.

West Texas: (Effective November 2, 1931).

Crane-Upton, Crockett, Ector, Howard-Glasscock, Pecos and Winkler Counties, Texas and Lea County, New Mexico: 50 cents a barrel.

Southwest Texas: (Effective November 2, 1931)

Refugio: Heavy: 75 cents.

Refugio: Light: (Same as Gulf Coast—see below).

Gulf Coast: (Effective November 2, 1931)

Goose Creek, Hull, Liberty, Orange, Pierce Junction, Mykawa, Moss Bluff, Raccoon Bend, Barbers Hill, Sour Lake, Spindletop, Sugarland, West Columbia, Humble and Refugio Light: Below 25 gravity: 70 cents, with differential of 1 cent for each degree to 40 and above which is posted at 86 cents.

Mirando: 75 cents; **Salt Flat:** 60 cents; **Darst Creek:** 60 cents; **Pettus:** 85 cents; **Markham:** 67 cents.

East Texas (Effective November 2, 1931)

Flat Price 83 cents.

North Louisiana and Arkansas: (Effective Nov. 4, 1931)

Caddo, Homer, Haynesville, Bull Bayou, Sabine, Cricton, De-Soto, El Dorado, Cotton Valley, Sarepta, Cartersville: Below 25 gravity 53 cents with differential of 2 cents for each degree beginning with 25 gravity and ending with 40 and above. Top price 85 cents a barrel.

Smackover: 55 cents.

Rocky Mountain States: (Effective Nov. 3, 1931)

Salt Creek: Below 29 gravity 61 cents; 29-29.9 gravity 63 cents, with differential of 2 cents each degree to 40 and above. Top price 85 cents.

Elk Basin and Grass Creek: $1.05; **Big Muddy:** 83 cents; **Lance Lance Creek** $1.05; **Rock Creek:** 85 cents; **Sunburst:** $1.00; **Osage:** 98 cents; **Cat Creek:** $1.05 cents; **Pondera:** 90 cents; **Hogback, New Mexico:** 80 cents.

Eastern States: (Effective November 3, 1931)

Lima: $1.00; **Indiana:** 60 cents; **Illinois:** 95 cents; **Princeton** 95 cents; **Wooster:** $1.15; **Western Kentucky:** 90 cents.

Pennsylvania: (Effective March 1, 1932)

Bradford District: $1.85; **National Transit Oil:** $1.80; **Southwest Pennsylvania Pipe Line Oil:** $1.55; **Eureka Pipe Line Oil:** $1.50; **Buckeye Pipe Line Oil:** $1.30; **Corning Crude:** 80 cents.

Michigan: (Effective Oct. 9, 1931). **Midland:** 55 cents a barrel. **Muskegon:** Same posting as Mid-Continent; 61 cents to 85 cents a barrel.

Canada: (Effective Nov. 3, 1931).

Petrolia: $1.90; **Oil Springs:** $1.97.

Summary of Field Operations, February, 1932

Recapitulation—United States

State—	Month of January, 1932 Completions	Producers	Gas Wells	Failures	Initial Prod. Oil	Initial Prod. Gas*	Total Prod.[1]	Cumulative—January and February, 1932 Completions	Producers	Gas Wells	Failures	Initial Prod. Oil	Initial Prod. Gas*	Total Prod.[1]
Oklahoma	62	30	16	17	76,312	66½	11,997,050	126	57	27	43	172,812	107½	25,629,950
Kansas	35	21	1	14	16,760	16	2,877,600	77	47	5	26	31,059	49½	5,959,850
Tex. outside G. Coast	471	388	12	71	2,907,627	133½	20,737,950	1,018	854	27	137	6,247,881	515¼	43,532,350
Gulf Coast	39	20	1	18	12,041	20	4,058,950	90	40	2	48	30,314	24	8,432,350
North Louisiana	15	5	1	9	1,110	12	824,300	33	12	4	17	6,330	67	1,719,350
Arkansas	1	..	..	1	.....	...	975,000	2	..	..	2	.....	..	2,038,000
Eastern States	237	99	81	55	2,961	235¾	3,419,350	499	216	174	107	5,748	379½	7,236,400
Rocky Mountain States	9	6	1	2	25,512	13½	2,426,300	31	16	5	10	38,704	21¾	4,998,300
California	15	14	..	1	7,260	...	14,666,600	39	34	..	5	21,845	..	30,353,200
Total	884	583	113	188	3,049,583	497¼	61,983,100	1,915	1,276	244	395	6,554,693	1,164½	129,906,750

*Millions of cubic feet.
[1]Preliminary—subject to revision.

Development and Production Lower in February

Both field development and daily average crude production were lower during February. A total of 884 wells were completed in the United States, compared with 1031 wells in January. Considering the shorter month, the rate in February would not have exceeded 930 new wells on a 31-day basis. Daily average production for the United States dropped to 2,137,300 barrels, from 2,190,000 barrels in January. The total output of crude oil in the United States (A. P. I. report) was 61,983,100 barrels, compared with 67,890,550 barrels in January.

Texas, outside of Gulf Coast, recorded the largest decline in well completions, having dropped from 547 in January to 471 in February. As a result of the decline in completions, initial oil production was far under the January total. Indicated potentials of new wells in February showed a total daily initial of 3,049,583 barrels, against 3,505,110 barrels in January. East Texas accounted for most of the decline in new oil production, the reported initial of this area having dropped to 2,868,155 barrels, from 3,285,330 barrels in January.

Oklahoma and Texas reported the largest production declines in February. Oklahoma's daily average was 413,700 barrels, against 439,250 barrels in January, a decline of more than 25,000 barrels a day. Texas, outside of the Gulf Coast, recorded a decline in daily average production of more than 20,000 barrels, dropping to 715,100 barrels daily from 735,450 barrels daily in January. Production of the Gulf Coast declined only 1050 barrels a day. A decline in daily average production was also reported by the Eastern States, where production dropped from 123,050 barrels to 117,900 barrels. California's daily output continued at about the same rate as was recorded in January; over 505,000 barrels.

United States Production

State—	Total Production February*	Daily Average February*	Daily Average January
Oklahoma	11,997,050	413,700	439,250
Kansas	2,877,600	99,200	99,400
Texas, outside of Gulf Coast	20,737,950	715,100	735,450
Gulf Coast	4,058,950	140,000	141,050
North Louisiana	824,300	28,400	28,850
Arkansas	975,000	33,600	34,250
Eastern States	3,419,350	117,900	123,050
Rocky Mountain States	2,426,300	83,650	82,800
California	14,666,600	505,750	505,900
Total	61,983,100	2,137,300	2,190,000

*Preliminary—subject to revision.

St. Onge, S. D.—A wildcat structure near here which is known as the St. Onge structure, is to be tested this year by a group headed by H. F. Welch and G. N. Knapp, it is reported. St. Onge is in Lawrence County on the western line of South Dakota. Work is to be started as soon as weather conditions permit.

EAST TEXAS COMPLETIONS AND PRODUCTION
JANUARY AND FEBRUARY

County or Field—	Total Completions	Initial Production	Total Production
Joiner-Bradford	206	1,469,655	6,465,300
Kilgore	197	1,663,750	6,273,300
Longview	317	3,020,080	6,657,550
Others	7	.....	.....
Total	727	6,153,485	19,396,150

Past Twelve Months

The record for the past 12 months is an interesting study for comparative purposes, the following table giving the field statistics for all states:

Month—	Completions	Producers	Gas wells	Failures	Initial Prod.
October, 1930	1,199	587	245	367	615,002
November	1,253	644	217	392	901,046
December	1,479	650	310	519	979,111
January, 1931	1,156	519	211	426	796,860
February	815	348	192	275	459,727
March	819	347	153	319	704,526
April	905	479	164	262	1,858,297
May	1,095	594	212	289	3,075,384
June	987	593	160	234	2,999,552
July	821	469	140	212	2,720,113
August	899	545	155	199	3,031,762
September	826	473	145	207	2,757,667
October	1,223	849	169	205	5,630,346
November	1,008	694	132	174	4,313,796
December	950	636	147	167	3,171,401
January,* 1932	1,031	693	131	207	3,505,110
February	884	583	113	188	3,049,583

*Beginning January, 1932—Rocky Mountain field operations are included—data prior to that date did not include Rocky Mountains.

World Cartel Would Balance Production With Consumption

(*Continued from page* 12)

The oil industrialists in each of the countries mentioned (with the exception of U. S. A.) undertake to get their respective governments to prohibit drilling altogether or alternatively to put a tax of at least $30 on each foot drilled as soon and as long as the production of that country is above its "declared minimum." Otherwise every country is free to produce whatever it chooses—i. e. below or above its "declared minimum." I rely on the prohibition of drilling or alternatively on the tax on drilling to act as a powerful brake for the producers not to go above their "declared minimum," but there need be no undertaking on the part of anybody not to produce more than the "declared minimum."

Fund Distributed

The fund accumulated before the first quarter is at the end of the quarter distributed pro rata to those countries which produced less than their "declared minimum" if during that quarter the total production of all the countries together has been less than their "combined declared quarterly minimum." The existence of this fund will work as an inducement for producers to produce less than their "declared minimum" in order to participate in the distribution of the fund at the end of the quarter and it is therefore a practical certainty that the total production of all the countries together will be less than their "combined declared quarterly minimum," in other words, it is a practical certainty that the first quarter's fund will be divided after the end of the first quarter and consequently that those who cooperated to bring over-production to an end will get their just reward. The U. S. will not participate in the distribution of the fund.

Suppose that during the first quarter all countries have produced up to their "declared quarterly minimum," with the exception of Venezuela having produced 7,000,000 barrels below their "declared quarterly minimum," Persia 2,000,000 barrels, Dutch East Indies 3,000,000 barrels, Trinidad 1,000,000 barrels and Roumania and Mexico respectively 3,000,000 barrels and 2,000,000 below their "declared quarterly minimum." In total, therefore, the production of all countries cooperating under the plan has remained 18,000,000 barrels below the "declared quarterly minimum." The available fund of $10,000,000 would, therefore, be paid to the oil industry of Venezuela, Persia, Dutch East Indies, Trinidad, Roumania and Mexico pro rata to the differences between the "declared quarterly minima" and the actual production of each of these countries. Therefore, producers who actually applied conservation in each of these countries would be paid on the same basis, and on an average they would receive: $\frac{\$10,000,000}{18,000,000} = 55$ cents for each barrel for which their production was below their "declared quarterly minimum."

If all the countries together would have produced during the first quarter just $\frac{100,000,000}{4} = 25,000,000$ barrels less than their combined "declared minimum," then on an average each of the operators applying conservation would receive out of the fund 40 cents for each barrel which they produced less than their "declared minimum" which is just the figure which I calculated was the profit they accepted to forego by producing less than their "declared minimum." The production for the world's markets outside the U. S. would in that case have been in balance with "normal consumption" and the oil actually produced would have been sold at an economical price, which on the lines of our previous example would at least have been 20 cents per barrel higher than during the time of over-producing.

If, during any quarter whilst the plan is in operation, the U. S. would have exported more than they are entitled to, they must take back such surplus during the next quarter from the other countries co-operating under the plan in proportion to those countries' "declared minimum productions." The delivery should be c.i.f. in the principal markets of consumption at f.o.b. world market price during the quarter when the U. S. exports exceeded the agreed figure plus the ruling freight during that quarter.

After the first quarter has passed off satisfactorily and the first quarter's "fund" has been distributed among the producers who applied conservation it is reasonable to assume that as a result of higher market prices for oil we should have to offer the combined producers of each of the above countries during the second quarter a bigger reward than 40 cents per barrel in order to induce them to remain producers below their "declared minimum." Once prices have improved, however, it will be much simpler for the oil industry in these countries to find an amount considerably larger than $10,000,000 as payment into the fund for the second quarter. In other words, once the fund has been started satisfactorily I do not expect any difficulty in its continuation. It might be considered advisable however to limit the compensation per barrel for producing below the "declared minimum" to not too high a figure.

Fuel Oil One Dollar

I propose that the scheme should be continued for quarterly periods until for a period of six consecutive months the free market price of liquid fuel f.o.b. in the Gulf of Mexico (or such other market as may be considered as most correctly representing the world market price) has been at least $1.00 per barrel and during the same period the price of 64° Beaume gasoline has been not less than eight cents per gallon. After these prices have existed for at least six consecutive months for both fuel oil and gasoline simultaneously the scheme would be called off, but would be re-introduced as soon as the prices would come down to below these critical levels.

A necessary condition is to be made as to the right for every country, excluding the U. S., to cancel this scheme. The stock position in the U. S. must be kept within such limits as not to become a menace overhanging the rest of the world's markets if at any time the scheme should be called off. The producers outside the U. S. must be secured against the possibility, while they are limiting production and drilling, that the U. S. should be accumulating still larger stocks than they have already, with which, if at any time the scheme should be called off, the markets outside the U. S. could be flooded. Therefore, as soon as the total stocks of crude and products in the U. S. should exceed 620,000,000 barrels (approximately today's total) any country other than the United States must have the right to give notice of termination of the scheme by the end of the quarter year during which this figure was exceeded. This condition will also clearly demonstrate that this plan

will in no way result in any restraint of trade in the U. S. A. To the contrary. As stocks may not go above a certain level without running the risk to see the scheme cancelled, this condition will be an inducement to stimulate the outlet on the interior market.

As soon as the scheme is called off, the prohibition of drilling, or alternatively the tax on drilling, is to be called off. The simple machinery by which the international oil meeting controls the operation of the plan must, of course, be kept intact, even during such times as the plan is not functioning as indicated in the previous paragraph, so that at any time when prices have again dropped below the economical level, the plan will be re-instated.

It is reasonable to assume that some of the smaller companies, however anxious they are to join the scheme, would find it difficult to find before the beginning of the first quarter an amount of eight cents per barrel for their "declared minimum." Very likely some companies are already in the hands of the banks to a very large extent and might find the banks unwilling to provide the money for their payment into the fund. In order to avoid such difficulties, which would wreck the whole scheme, I suggest that the major companies inside and outside the United States should form an "International Oil Industry Finance Syndicate" which would undertake to finance the payments into the fund of such weaker and smaller companies in case they cannot find accommodation with the banks, on certain "maximum conditions" to be fixed before hand by the "International Oil Industry Finance Syndicate." The syndicate would undertake to do such financing on those "maximum conditions" against which they would take a first mortgage on the properties of the companies that want such financing. The improvement in the industry that my scheme would effect would most likely result in those smaller companies paying off their debt when it falls due after the quarter for which the advance is made, but if by any chance they could not pay off the syndicate would foreclose and it would sell such properties to the highest bidder.

Fund Not Unreasonable

The total amount that the "International Oil Industry Finance Syndicate" would have to find would be by no means unreasonably large. As I mentioned above, the total amount to be paid into the fund for the first quarter might be something like $10,000,000. The major companies, of course, would be able to find their own subscription and I therefore take it that it is not exaggerated—in fact I think it very much under-estimated—to assume that half of the required amount will come in without the least difficulty. That would leave $5,000,000 to be found by getting credit either from the banks or from the "International Oil Industry Finance Syndicate." Of this syndicate all the major companies of the world would be members and it is therefore clear that this group of very powerful oil companies would not have the slightest difficulty in finding the finances for an advance of $5,000,000.

I still want to deal with the following possibility. It is conceivable that some insincere industrialist would reason as follows:

"I know that I am able to produce only 300,000 barrels per annum, but I declare to my national representative that I consider that my minimum production is to be 3,000,000 barrels. I will then pay into the fund 3,000,000 x 8 cents per barrel, or $240,000. I will produce only 300,000 barrels, and I will therefore draw for producing below my declared minimum, 2,700,000 x 40 cents per barrel, or 1,080,000 which will give me a handsome profit of $840,000 for nothing."

Such an insincere industralist would, however, take a tremendous risk—such a risk that I think he would never play such a trick.

As I have described above, the payments out of the fund are not paid by the fund to each of the industralists who produced less than his "declared minimum" but to the combined industralists of each of the participating countries that have produced less than their "declared national minimum." Our insincere industralist may therefore be caught in the following way: Although he had produced 2,700,000 barrels below his dishonest "declared minimum," the other industralists in his country may have produced 2,700,000 barrels more than their "declared minimum" with the result that the total production of the country in which our insincere industralist works has been up to and possibly even over that country's "declared minimum." Our friend would therefore find that he would not get payment out of the fund at the end of the quarter, but that he would have contributed to the fund an amount of $240,000 which would be a clean loss to him. I therefore take it that we can assume that nobody will dare to declare a minimum which he knows he cannot produce.

Majority Rule

There is another point that requires discussion. Suppose the representatives of country X, in preparation for the international meeting that would put my scheme into effect, come together. As there are a number of small operators in that country one cannot assume that 100 per cent of the producers will be present. Suppose 95 per cent are represented, and those 95 per cent come to the conclusion that their "country's minimum" should be 100,000 barrels per day. But what about the five per cent not present? And what about any new fields that may be discovered during the first quarter's operation of the scheme? The meeting of that country's operators may then decide in the following way: They may either ignore the five per cent that are absent and the not-yet-discovered oilfields and declare as their "country's minimum" 100,000 barrels. They will then have to find among themselves for the first quarter's production (91 days) 100,000 x 91 x 8 cents = $728,000 and prohibition of drilling or alternatively a drilling tax of at least $30 per foot is introduced in that country as soon as that country's production is above 100,000 barrels per day. If the meeting of operators thinks it wise to leave more room for the absent five per cent and for the new fields that may be discovered, they are perfectly free to fix their minimum at, say 120,000 barrels. In that case the prohibition of drilling or alternatively the tax on drilling will only start when the production goes above 120,000 barrels; but on the other hand they will have to find as a participation in the fund 120,000 x 91 x 8 cents = $837,000.

Of course these last two calculations are not perfectly correct because the figure of eight cents a barrel would be affected to a minor extent by the higher "minimum declaration" of the particular country's producers. However, in order to explain my proposal I do not think it is necessary to go into this mathematical detail.

Although I expect that the application of my scheme will cure matters within a reasonably short time, we must consider what would happen if the scheme were still working at a moment when, in a country which up to now has not produced oil, a major oilfield would be brought in, thus placing that country amongst the world's oil suppliers e.g. Iraq. Such an occurrence need not upset the scheme at all. Suppose the Iraq pipe lines are built and ready for operation with a capacity of 28,000,000 barrels per annum, then all that has to be done is that the "Iraq Oil Industry"

become members of the scheme with all its rights and obligations; that is to say they pay as contribution to the fund for a minimum production of 28,000,000 barrels per annum, or so many barrels as they decide themselves, and draw from the fund if their production remains below their "declared minimum." Of course the smaller their "declared minimum" the easier things will be in general, but just as little as a large "declared minimum production" for any of the other countries would upset my scheme, as little would a figure of 28,000,000 barrels for Iraq upset it. Of course their appearing on the scene would affect the contribution per barrel for all the participants, but not to an extent which would endanger the scheme.

As the Iraq production is controlled by a small number of world oil interests, in this case instead of getting the Iraq government to prohibit drilling or alternatively to levy a tax on drilling as soon as production would go above the "declared minimum Iraq production," it might be arranged that the Iraq producers would give a binding undertaking that on no condition would they produce more than their "declared minimum" production as long as the scheme is in operation.

A similar binding undertaking might be given by the D. E. Indies, Colombia, Persia and all those countries principally controlled by one or two producing groups. For all those countries, there would in that case be no need to give the undertaking that under certain conditions a drilling tax or prohobition would be instituted as such "certain conditions" could not arise.

This scheme is not intended to supersede any other arrangements that exist already or may still be made to bring production into balance with consumption. Such arrangements, including a state compact in the U. S. will work equally well and with more purpose with my scheme than without it.

It may be claimed for this plan that it has the merit of obviating the risk of exploiting the sonsumer, because as soon as a "normal" level of prices is reached, the arrangement is called off and all producers regain complete freedom of action, and the plan only becomes operative again when prices drop below a certain emergency level. Therefore, supervision or interference by governments will not be necessary. Furthermore, the scheme can be put into effect without delay as it need not wait for any change in the laws of the U. S. It will not only save the oil industry, but will be of great help to the coal industry, as it will restore to the latter industry all those previous buyers of coal who only went over to oil on account of its absurdly low price.

In conclusion, I would mention that in recent times, in various fields of industrial activity, different plans have been proposed to balance production with consumption.

I am in entire agreement with the criticisms which have denounced most of those schemes as cumbersome and hence probably unworkable on account of the complicated systems of control which they necessitate in order to put artificial brakes on production.

As the plan I have outlined takes full account of the functioning of economic laws, and only speeds up the result which economic laws bring about over a longer period, my plan does not require any complicated machinery.

The chief elements this plan requires to restore the balance between production and consumption are:

First—that the international oil industry has the conviction that only an international agreement can put things right.

Second—that a fund is created to speed up the normal reactions of the law of supply and demand.

Third—that the U. S. industry accept an export position as I have outlined, until such time that their laws will permit them to join the scheme on the same conditions as all the other countries.

Fourth—that the drilling tax or prohibition outside the U. S. is instituted as indicated where and when necessary

Counter-Suits Brought to Uphold Commission Rule in Eastex

(*Continued from page* 16)

presented as evidence in contesting the rules of the commission. It is reported that the group have been tentatively promised a hearing in federal district court at Tyler within the next 30 days on injunction petitions recently filed, naming the members of the commission as plaintiffs. It is understood that a Dallas operator has been designated to make the first test case against the commission.

Operators, refiners and carriers supporting this proposed drive against the commission's orders are not in accord as to what is desired in the way of amending proration restrictions. The majority favor a more liberal production allowance per well, while a few in the group hold to the view that their respective interests will be best served by throwing the field on a wide open basis.

Plans are to submit evidence to the court to substantiate a claim that physical waste will not occur in the field should wells be permitted to flow several times the maximum daily quota now fixed by the authorities. Such procedure would impose on the court the responsibility of determining whether the members of the commission are the proper judges of what constitutes oil and gas waste after having conducted open hearings on the subject prior to the issuance of the orders under attack.

Indications are that the opposing group are hopeful of obtaining a compromise in the form of an increase in the allowable production per well from its present quota of 75 barrels to either 125 or 150 barrels daily. The increase is desired with full knowledge that the top posted price for the field and all other fields in the Southwest will be adversely affected by reason of the added burden being thrown upon the crude market. Cheaper crude is the goal of the refiner members of the plaintiffs, as crude prices at prevailing levels throttles their operations.

Should a compromise in the form of an increase in allowable not be forthcoming as result of this proposed court attack on the invested rights of the commission, the plaintiffs cling to the hope that major companies may raise their crude price posting in the East Texas field in advance of the heavy gasoline consumption period.

The East Texas field has 4375 completed oil wells, and if all make their maximum quota of 75 barrels daily the output of the field is 328,125 barrels daily. Actual production has been ranging from 300,000 to 310,000 barrels daily lately because of some of the leading purchasers having a market demand for only 65 barrels daily per well. Should the field be placed on an allowance of 125 barrels daily per well it would be yielding 546,875 barrels daily, and 656,250 barrels daily when calculated on a basis of 150 barrels daily per well. Only a small fraction of the total wells are unable to produce any of the above daily quotas.

Winnett, Mont.—Oretana Oil Company holdings in the Cat Creek field have been taken over by Omedia Oil & Gas Company, which plans to condition the producing wells in the field and operate them.

Reports Shows Eastex Field Allowed Higher Output Than Rest of State

Austin, Texas.—With the exception of that of Yates and Van, the daily average production per well in East Texas exceeds that of any other area in the state where proration orders are in effect, according to figures released March 7 by the Texas Railroad Commission.

R. D. Parker, chief supervisor of the oil and gas division of the commission, explained that a reduction in the allowable production of Yates pool would result in an inefficient gas-oil ratio for the area. However, numerous operators have protested the allowable of Van, which admittedly has a much thicker sand than that of the general East Texas areas.

A proration order will be issued by the railroad commission for Reagan County as soon as commission observers have determined efficient gas-oil ratios, proper tubing programs and proper back-pressures for that area.

Statement of Texas Railroad Commisssion Showing Per Well Average Production of Crude Oil By Districts in Texas

District—	Approximate Number of Wells	Production for District on February 20, 1932	Average Production Per Well for District on February 20, 1932
Panhandle	1,900	49,400	26.0
North Texas	15,000	48,350	3.2
West Central Texas	8,300	23,700	2.8
West Texas	2,880	175,950	61.1
East Central Texas	1,450	55,250*	38.0
East Texas	4,200	279,050	66.4
Southwest Texas	3,580	52,000	14.5
Gulf Coast	2,200	113,700	51.6

*Includes Van field with 293 wells producing 48,400 barrels.

Statement Showing Per Well Average Production of Several of the Important Pools in Texas

Field—	Approximate Number of Wells	Field Production on February 20, 1932	Per Well Average Production on February 20, 1932
Van	290	48,400	166.0
Yates	400	55,300	138.2
Howard-Glasscock	520	22,300	42.8
Winkler	490	30,500	62.2
Crane-Upton	590	19,450	32.9
Ector	80	5,400	67.5
Darst Creek	250	15,500	62.0
East Texas	4,200	279,050	66.4

Question Constitutionality of Texas Anti-Trust Statutes

Austin, Texas.—C. L. Black of Austin, representing Standard Oil Company of California, one of the 17 defendants in the "Allred Ouster Suit," March 7 began an attack on the anti-trust laws of Texas, charging that the action of Texas courts in holding valid farm co-operatives and other co-operative marketing associations has voided such laws. On this basis, general demurrers have been filed by the defendants in the suit.

Attorney Black's argument followed the pro-state decision of Judge J. D. Moore, before whom the case is being tried, which upheld and granted the plea of the attorney general to deny all pleas in abatement and pleas of misjoinder which had been filed by the oil company attorneys in their answers to the state's original petition.

In his plea for denial of the defendants' pleas, Attorney General Allred charged that each of the defendants were guilty of the same conspiracy, that each was a party to one crime, and that all should be tried together.

Attorney General Allred has announced that he will take the case to the supreme court at once if the defendants are able to establish in Judge Moore's court that the Texas anti-trust laws are void.

A decision on the validity of the Texas anti-trust laws may be expected shortly after May 14 as the court has decreed arguments must be completed by then.

Early Reservations Indicate Good Attendance at A. A. P. G. Meet

Oklahoma City, Oklahoma.—Early reservations being made by members of the American Association of Petroleum Geologists indicate a surprisingly large attendance for the seventeenth annual convention to be held here March 24, 25 and 26. According to an announcement mailed out from association headquarters at Tulsa during the past week, the tentative schedule of events is as follows:

Wednesday, March 23

Registration Committee meetings: executive, research, constitution and by-laws, geologic names, and business. Biltmore Hotel.

Thursday, March 24

Registration. Technical sessions. Nomination of officers. College and fraternity meetings. Ladies entertainment.

Friday, March 25

Balloting for officers. Technical sessions. College and fraternity meetings. Field trips. Ladies entertainment. Dance.

Saturday, March 26

Business meeting. Election of officers. Executive committees. Technical sessions. Field trips. Ladies entertainment.

Concurrent meetings will be held by the Society of Economic Paleontologists and Mineralogists and by the Society of Petroleum Geophysicists.

Import Duty and Lube Oil Tax Imposed by Revenue Bill

(*Continued from page* 13)

duction profit, the devlivered cost would appear as 97 cents per barrel at refineries on east coast. Adding proposed tariff it is found that delivered cost would be increased to $1.39 per barrel, which is 25 cents per barrel above current market value of resultant products.

The whole question of whether or not the proposed tariff rates would operate as an embargo seems therefore to develop upon the correctness of production and refining costs quoted above. The traiff commission's 62 cent figure is probably too high as Maracaibo crude is being sold currently at figures substantially lower. The refining cost figure of 21 cents was offered by a pro-tariff witness and has been questioned by opponents of the traiff measure who describe it as being entirely too low.

Laurel, Montana.—Peter Antonioli's wildcat test on Happy Hollow structure, east of here, in southern Montana, is last reported to be drilling below 2450 feet. Location is on Section 21-2-25e. The Dakota is expected within another 130 feet. This well has reported some gas showings in the Frontier at 1400 feet and more in the Muddy at 2365 feet.

Personal Mention—Men You Know

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AMOS L. BEATY, president of the American Petroleum Institute, and Mrs. Martha W. McNamara of Milwaukee, have gone to California on their honeymoon after being married in New York March 5.

E. B. REESER, president of Barnsdall Oil Corporation, recently left California for the Mid-Continent, following the issuance of a report on the oil industry in California which was made at the request of Governor Rolph.

S. L. GILLAN, well known in California geological circles, recently visited Shanghai during the most violent fighting between Chinese and Japanese forces. He is making a leisurely trip around the world and is now visiting in Europe. He will return to California in June.

H. G. HANEY, formerly driller for Shell Oil Company at Balik Papan, Borneo, has returned to Los Angeles, following an extended absence. He is now located at 9045 West Twenty-Fifth Street, Los Angeles.

W. O. CRAIN has been appointed general attorney for The Texas Company to succeed the late Judge Thomas J. Lawhon, who died on February 12. Mr. Crain has been identified with the legal department of The Texas Company for a number of years.

TEXAS Gulf Coast Oil Scouts Association will be hosts at a dinner March 11 at the Humble room of the Lamar Hotel, Houston, to a number of individuals affiliated with the producing branch of the oil industry. The purpose of the meeting will be discussion of the association's delegates' action in the scout meeting scheduled in Dallas March 19.

CHAS. E. GEDDES, drilling contractor and operator, with headquarters at Ponca City, Oklahoma, was a business visitor in Fort Worth last week. Geddes was superintendent of drilling for Marland Oil Company prior to its consolidation with the Continental Oil Company.

G. RAYMOND, general manager of Black, Sivalls, and Bryson Manufacturing Company, has been appointed chairman for 1932 of the American Petroleum Institute's, sub-committee on welded steel tanks, whose activities come under the committee on standardization of steel tanks for oil storage. Members of the sub-committee are: E. E. Dillman, Wyatt Metal and Boiler Works, Dallas; E Stanley Durward, Shell Petroleum Corporation, Dallas; W. H. Graves, Columbian Steel Tank Company, Kansas City; W. A. Knapp, Butler Manufacturing Company, Kansas City; J. R. McWilliams, Skelly Oil Company, Tulsa; H. M. Staggs, Atlantic Oil Producing Company, Dallas, and F. E. Van Wormer, M and V Tank Company, Wichita Falls.

HENRY C. CORTES, who represented the Houston Geological Society as chairman of its committee on nomenclature of Gulf Coast fields and salt domes, is a member of Magnolia Petroleum Company's organization for carrying on production and exploration operations along the Gulf Coast of Texas and Louisiana. His headquarters are at the company's offices in Lake Charles, Louisiana, but he also spends some time each week in the Texas division of the Gulf Coast, working out of the Houston office.

HENRY C. CORTES

Prior to the consolidation which merged Vacuum Oil Company with Standard Oil Company of New York and its subsidiaries, including Magnolia Petroleum Company, Cortes was with the former concern for eight years, doing scouting and lease work at first, but later entering the geological department. Aside from doing geological work, he became much interested in geophysics when that method of searching for oil fields was introduced, and took an important part in the geophysical work which resulted in discovery of the Cameron Meadows and Iowa fields and the Roanoke prospect of southern Louisiana and of the promising Premont prospect in Jim Wells County, South Texas, in which areas Magnolia Petroleum Company has valuable holdings, including nearly all promising acreage in some instances.

Cortes made his entry in the oil business about 1920, starting as a roughneck and roustabout at Hull, and spending several years gathering general experience in field work with various smaller companies. Born in Houston in 1892, he went to Houston schools and later attended Sewanee Military Academy and the University of the South at Sewanee, Tennessee.

HAROLD J. DUNCAN, formerly deputy supervisor, Oil and Gas Leasing Division, Mid-Continent District, U. S. Geological Survey, with headquarters at Muskogee, Oklahoma, has been transferred to Casper, Wyoming, as supervisor of the Rocky Mountain District of the same organization. E. A. Hanson, deputy supervisor in the Mid-Continent district, with former headquarters at Roswell, New Mexico, is transferring to the Muskogee office to fill the vacancy caused by Mr. Duncan's transfer.

STANDARD Vacuum Transportation Company announces election of George D. Ali as president at the regular March 1 meeting of the company. Other officers elected were: James J. McGuire, ice president; Walter E. Simpson, vice president, and Charles H. Kunze, secretary.

The Standard Vacuum Transportation Company is the subsidiary of the Socony Vacuum Corporation in charge of the marine equipment of the parent company.

Oklahoma--Kansas Field Notes

FLOYD SWINDELL, *Staff Representative, Tulsa, Oklahoma*

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Ray Collins Earning Approval Of Oklahoma City Pool Operators

Oklahoma City.—Results obtained by Ray M. Collins on proration in the Oklahoma City pool are causing operators to feel that a very constructive step was taken when he was prevailed upon to accept the duties of umpire in that district in addition to his position as state proration umpire. Gradual changes being brought about through the efforts of Collins and his staff are tending to promote co-operation among all operators in the pool, a goal which other directors of proration regulations have been unable to attain.

At a meeting of operators held last week, 42 of the 66 companies operating in the field, agreed to the proration program and pledged themselves to bear proportionately the expense of carrying out the regulations prescribed by the corporation commission. Champlin Refining Company was the only operator who cast a negative vote. Previously only 22 companies were giving financial support to the program, and among these only a few of the smaller operators were listed.

Plans have been laid for removing all underproduction and under-run oil during the next 45 to 60 days, thereby eliminating a problem which had grown steadily worse with a rapidly declining demand. Under the last proration order, which applies for the period March 1 to 15, allowable production was increased from 94,000 to 102,000 barrels daily, and another increase is expected for the last half of the month when operators and purchasers appear before the corporation commission on March 12.

Four locations were staked and five wells completed during the past week, making it one of the most active weeks in several months. Harrell & Davis' Fish 1, SE NE SE SE Section 22-11n-3w, which caught fire with no damage when being bailed down, produced 1550 barrels the first 4¼ hours and was making gas at the rate of 104,000,000 cubic feet, flowing through a six-inch choke against 125 pounds back pressure. Production is coming from Wilcox sand logged between 6425 and 6505 feet, the total depth. This completion is located in the new southwest Wilcox area and is the largest gas producer in the sector.

Slick & Urschel Incorporated's Terminal 3, SW SE NW Section 3-11n-3w, largest completion of the week, gauged 6589 barrels in three hours and 45 minutes and was making gas at the rate of 38,000,000 cubic feet. Production is coming from Wilcox sand at 6322 to 6484 feet. Gulf Production Company of Oklahoma opened Garrett-Rucker 2, SW SE SW NW Section 2-11n-3w, in the thickly drilled portion of the north end of the pool, for an initial flow of 1344 barrels in five hours from Wilcox sand at 6227 to 6282 feet.

The most important of the four locations was Indian Territory Illuminating Oil Company's Lord 1, SE NE NE Section 35-11n-3w, midway between the present intermediate Wilcox zone and production from that formation on the southern end of the pool. Considerable speculation exists concerning the possibility of the sand in this sector, some geologists being of the opinion that fast southwest dip may have resulted in a high water level which would exclude this area as an important producing spot. It seems logical to assume that wells completed in the sand at this point should be at least as good as those on the south end of the pool and possibly better.

Second in importance among the locations was R. A. Wallace et al's Coates 1, SE SE NE NW Section 22-11n-3w, about two locations from production in the new Wilcox area. Spears et al's Penman 1, CW½ NW NE Section 22-11n-3w, the nearest location, is a cellar.

Four New Wildcats Added in Kansas, Bringing Total to 17

Wichita, Kansas.—Four new wildcat tests were added in Kansas during the past week, bringing the total number of tests in that classification to 17. Ninnescah Oil & Gas Company has a rig on the ground for Hardesty 1, SW SE SE Section 28-27s-11w, two miles northeast of the town of Cair and slightly over four miles southwest of Skelly Oil Company's Miller 1, NEc Section 30-27s-10w, in eastern Pratt County. Miller 1 (Miles), the discovery well, was completed in February, 1931, flowing 312 barrels in 14 hours from Kansas City lime at 3385 to 3441 feet and later drilled to 3464 feet, where it was rated at about 400 barrels. Joe Liggett will begin operations at an early date on Voshell 1, NE NE SW Section 3-23s-3w, approximately 11 miles due south of the Voshell pool in western Harvey County. Deitrick et al's Sinclair 1, SE SE SW Section 25-19s-1w, three miles southeast of Canton and about the same distance from production, will be the third test within recent weeks to try for extension to the Ritz-Decker-Garrett area in McPherson County.

The fourth test is that of Morgan and Flynn, pioneer Oklahoma wildcatters, who have made location for Haas 1, NE NE SW Section 30-18s-15w, 2½ miles southeast of the new Rush County gas field and in the extreme western portion of Barton County. Lease activity in this area has led the state for the past few months, large blocks being held by several major companies and numerous checker-board blocks by independents and majors. Eastern Rush County first attracted attention in March, 1930, when Milmac Oil Company completed for 16,500,000 gas, its Bithel Estate 1, CNW Section 11-18s-16w, production coming from a total depth of 3507 feet. Early in 1931 the area was extended when Syndicate Oil & Gas Company completed Tammen 1, CSW Section 11-18s-16w, gauging 34,000,000 cubic feet from a total depth of 3509 feet. In September, 1931, the area attracted further attention when Deep Rock Oil Corporation et al completed Koril 1, CNW Section 23-18s-16w, gauging 35,200,000 cubic feet from 3493 to 3516 feet. The most recent completion is Mid-Kansas Oil & Gas Company's Mohr 1, CNW Section 14-18s-16w, gauging 27,500,000 cubic feet at 3488 to 3502 feet. Possibility of developing considerable oil production on the flanks of the gas structure or on adjacent structure was seen when Dewey & Mitchell completed Greenwait 1, CSW Section 17-19s-16w, estimated good for 400 barrels from 3825 to 3840 feet.

Ritz-Decker-Garrett

Twin Drilling Company's Farver 1, SW SW SE Section 16-20s-1w, wildcat test located approximately three miles southeast of production in the Ritz pool, was shut down for orders

at 3494 feet, eight feet in the Wilcox sand. Operators were carrying a hole full of water from Viola limestone at 3438 to 3458 feet when the Wilcox was encountered. Since no commercial production has been found in the Wilcox in this area the test probably will be abandoned. Activities in the major portion of the area were routine.

North of Isern Pool

Gypsy Oil Company was shut down for tankage at Steckel 1, CNE NW Section 31-19s-10w, two miles north of the Hilligos et al's Isern 1 in western Rice County. Oil was standing within 50 feet of the surface at the time of last reports and the well is being given a high rating on initial estimates. Arbuckle limestone was logged from 3299 to 3324 feet.

In the northern portion of the Barton-Ellsworth Arch area, Tom Palmer et al were shut down on account of bad weather at Pasek 1, CSE Section 3-14s-11w, in eastern Russell County. Corrected reports give top of the conglomerate at 3302 feet. After setting 6⅝-inch casing at 3329 feet, operators encountered a hole full of water at 3340 feet and had top of the Arbuckle limestone at 3382 feet. A small showing of oil was encountered from 3412 to 3417 feet but its importance could not be determined because of the hole full of water which was being carried.

Burrton Area

One of the most active wildcat plays of 1931 is developing into a minor campaign in the Burrton area of northeastern Reno County. First attention was directed to the area in 1930 when Study & Turner completed Haury 1, NE NE SW Section 1-23s-4w, gauging 23,000,000 cubic feet of gas from 3333 feet. During the first eight months of 1931, five oil and combination oil and gas wells were completed at depths ranging from 3308 to 3376 feet. Continental Oil Company and Shell Petroleum Corporation's Blake 1, SW SE SE Section 23-23s-4w, originally completed for 13½ million gas at 3324 feet, was deepened to 3379 feet and completed in January, 1932, for an initial gauge of 16,000,000 gas and 200 barrels of oil. Seven wells now completed in the area show initial production ranging from less than a million to 26½ million gas and oil from 50 to 200 barrels.

Olson Drilling Company will drill three tests on acreage acquired from Shell Petroleum Corporation. Locations are staked for Goering 1, CNE SW Section 26-23s-4w; Johnson 1, CSW NW Section 24-23s-4w; and Roberts 1, CNW NW Section 24-23s-4w. It is also reported that Cromwell & Lewis have obtained acreage from Prairie Oil & Gas Company and will drill a test in SW SE Section 24-23s-4w, and that Indian Territory Illuminating Oil Company has staked location for Baughman 1, NW SW Section 35-23s-4w.

Two Hearings on Requests for Increased Allowables Scheduled

Austin, Texas.—A hearing will be held by the state railroad commission at Brownwood March 11 to consider proration orders for the Burkett pool in Coleman County, and another hearing will be held by the commission here March 14 on the same matter with reference to the Shamrock pool in Moore County.

A petition filed by attorneys for Shamrock Oil & Gas Company sets out that the Shamrock pool is separate and distinct from other Panhandle pools, and requests the commission to increase the allowable of the pool sufficiently to allow partial fulfillment of requirements of the Apache Refining Company's 5000-barrel plant at Sunray.

East Earlsboro Operators Agree To Lay Off Calvin Sand for 60 Days

Seminole, Oklahoma.—Operators of the East Earlsboro district met with State Umpire Ray M. Collins March 5 and agreed on a 60-day halt in all activities in that district regarding attempts at new production in the Calvin sand series. Minnehoma Oil & Gas Company's No. 3 NW NW NW Section 17-9n-6e, an old Wilcox producer, recently was plugged back to 2884 feet and the casing ripped from 2691 to 2696 feet. The first 13 hours after ripping the casing the well produced 72 barrels of oil and 625 barrels of water and is now flowing at the rate of about 150 barrels of oil and 2200 barrels of oil daily. Operators were granted permission to set a whipstock at 2782 to 2797 feet and to drill a new hole past the whipstock. If satisfactorily completed in this manner it will be allowed to produce at the rate of 50 barrels per day. Acreage owners agreed not to drill any new wells, plug back old producers, or rip casing during the 60-day period.

Fish Pool

Mid-Continent Petroleum Corporation is drilling below the plug in Bruner 1, NE NW SE Section 9-7n-8e, big gasser which blew the tools from the hole and had to be killed. When last reported it was bottomed at 2943 feet in sand with the hole loaded with heavy mud.

Wanette Pool

Mid-Continent Petroleum Corporation's Archer 3, SW SE SE Section 14-6n-3e, on the northeast edge of the Wanette pool, indicates that production will not be found in commercial quantities much farther in that direction. Encountering only a relatively small amount of oil at 3518 to 3552 feet, it was given a 10-quart shot from 3520 to 3530 feet, after which it swabbed 100 barrel of oil the first seven hours.

Lincoln County Community Test Plugs Back to Test Peru Sand

Chandler, Oklahoma.—Barnsdall Oil Corporation et al's Taylor 1, SW SW NW Section 17-14n-5e, community well cat about two miles southwest of the Davenport pool in Lincoln County, was plugging back to test the Peru sand after failure to find commercial production in the Wilcox and Hunton formations.

Atlantic Oil Producing Company's Bebee 1, NE SW SW Section 8-13n-6e, four miles southeast of the Sac and Fox Agency in southwestern Lincoln County, topped the Hunton at 4206 feet and cored a porous dolomite which appeared to be well saturated. It is now shut down to run eight-inch casing which will be cemented on top of the Viola limestone at 4350 feet. Total depth is 4357 feet. This wildcat test is running about 100 feet structurally higher than a test in Section 5-13n-6e and slightly lower than one in Section 9-13n-6e.

Date Announced for Meeting of Pacific Coast Division A. P. I.

Los Angeles, California.—The Pacific Coast district of the American Petroleum Institute's production division will hold a spring meeting and informal dinner March 28 at the Engineers Club here. The meeting will be open to the public.

A. H. Bell, district chairman, has announced that H. W. Graham of Pittsburgh, Pennsylvania, will present a paper entitled "A Study of Rotary Drill Pipe."

News From California Fields

BRAD MILLS, *Staff Representative, Los Angeles, California*

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Important Kettleman Hills Tests Still Held Up By Fishing Jobs

Coalinga, Calif.—Important tests on the North and Middle Dome at Kettleman Hills showed little change during the week, with two of the most interesting wells held up with difficult fishing jobs. Desire of at least two companies to test edge holdings on the North Dome and progress of the second Middle Dome test also featured developments.

Standard Oil Company of California drilled to 7540 feet in No. 6-29V, Middle Dome test, and cemented a string of 9⅝-inch casing over the Temblor at 7513 feet. Progress in this well has been slow but steady and it may be the first official completion on the Middle Dome. The shutoff was made nearly 200 feet deeper in this well than in Petroleum Securities Company's Burbank 1, a direct offset. It should not be necessary to drill to 9000 feet to include that portion of the Temblor which seemed to produce best in Burbank 1.

Petroleum Securities Company tested the 8⅝-inch casing in Burbank 1, Middle Dome well which practically proved this part of the field, and found it had parted at some depth. A heavy strain was taken on the string to determine its condition. The frozen drill pipe was recovered to 5180 feet. The fishing job has involved the small flow string, the drill pipe and the 8⅝-inch water string. Mechanical condition of the hole is admittedly very bad, and a satisfactory completion is questionable. The well made a remarkable showing when tested at 9332 feet and plugged to 9208 feet, but the nature of water and mechanical problems offers a severe handicap.

Standard Oil Company will drill a well on the extreme north plunge of the North Dome which should help determine the producing limits of the structure. The location is on Section 19-21-17 and about 4000 feet northwest of recent completions near the flank.

North American Oil Consolidated has cemented the lost drill pipe at 8670 feet in Blauvelt 1, edge test on the North Dome, and will sidetrack and redrill from this depth. After drilling to 9500 feet, the drill pipe froze above 9000 feet, and other complications added to the trouble. Blauvelt 1 should be very near the producing limits of the field, but no production test has been made. Operations have been temporarily suspended.

North American Oil Consolidated's Elsinore 1, also an edge test on the North Dome and located between Shell Oil Company's Dixon 1 and Blauvelt 1, has been flowing at the rate of 2400 barrels but the water cut has been as high as 40 per cent. This indicates that the shutoff was too high, but the source of the water has not been definitely determined. Elsinore 1 was drilled to 8713 feet. The gas flow was unusually low, running around 1,000,000 cubic feet.

Kettleman North Dome Association is drilling and deepening seven wells and should complete two or three wells during the next two or three months.

Los Angeles.—L. P. St. Clair, president of Union Oil Company of California, stated at the annual meeting March 1 that it was his private opinion that the oil business would do better under some form of state control. He appeared pessimistic about the immediate outcome, but insisted that it was his personal opinion and did not necessarily represent the opinion of the company.

He pointed out that domestic business has not declined much during the past two years, but that the industry had been losing money most of the time. He said that if the so-called "big men" of the industry would cooperate a little more, use intelligence, cease destroying values and giving the refined product away, the oil business would be something to be proud of. He added that he had to hang his head when he considered what had been done. He said that the Sharkey bill was weak, and that he doubted whether a tariff would do much good at this time.

General Making Test of Very Deep Formations at Belridge

Bakersfield, Calif. — General Petroleum Corporation is drilling at 8220 feet in a hard brown shale in Berry 1, a deep test in the South Belridge field and a well which should go a long way toward determining the possibilities of the very deep zones in this district. Abandonment was considered around 7000 feet, but the well was in a position to prove the very deep formations at little extra expense. Although not located far from production in the Temblor formation in the North Belridge field, there has been little connection between the two districts. This well was started with elaborate equipment and one of the strongest derrick foundations ever built. Less trouble has been experienced below 5000 feet than above that depth.

Belridge Oil Company is drilling around 7900 feet in No. 64-27, a very deep test in the North Belridge field. The Temblor is normally found at about 5000 feet in this field, and drilling to such a depth tests formations far below the known producing zones of a few years ago.

Development of the Temblor around 5000-5500 feet has not been as intensive as expected in the North Belridge field. Belridge Oil Company and Associated Oil Company control the best acreage, but other companies are within the proven limits of the Temblor.

Ventura, Calif.—A new gas conservation plan for the Ventura Avenue field is expected to reduce oil production by about 7000 barrels, although it is difficult because of gas requirements to estimate the drop in the oil output. Gas production will be reduced to actual outlet requirements to eliminate all waste. It is estimated that Associated Oil Company will reduce its oil production by about 4000 barrels. Shell Oil Company will reduce its output by 2000 barrels or more, while General Petroleum Corporation will cut back about 300 barrels. The decision to cut back followed efforts to reduce gas waste in a field which has produced an excess of natural gas for several years. The waste at one time was especially high, but has been lower during the past two years.

California Proration Schedule March, 1932

	Potential Barrels Daily	Allotment Barrels Daily	Per Cent Allotment
SAN JOAQUIN VALLEY			
Belridge	18,250	8,500	46.58
Coalinga	32,710	8,000	24.46
Elk Hills	26,430	12,000	45.40
Fruitvale	8,990	3,700	41.16
Kern Front	14,570	7,000	48.04
Kern River	11,260	2,500	22.20
Kettleman Hills	285,000	60,000	21.05
Lost Hills	5,100	800	15.69
McKittrick	4,355	1,800	41.33
Midway-Maricopa	96,155	50,000	52.00
Mount Poso	19,310	8,000	41.43
Round Mountain	14,640	2,400	16.39
Wheeler Ridge	550	550	100.00
Other Fields	80	...	.....
Total	537,400	165,250	30.75
COASTAL DISTRICT			
Capitan	1,350	...	.....
Elwood	20,200	10,900	53.96
Rincon	1,980	1,050	53.03
San Miguelito	600	500	83.33
Santa Barbara	375	350	93.33
Santa Maria	14,500	2,650	18.28
Summerland	150	150	100.00
Ventura Avenue	78,910	40,000	50.69
Ventura-Newhall	6,125	3,650	59.59
Watsonville	60	50	83.33
Total	124,250	59,300	47.73
LOS ANGELES BASIN			
Alamitos Heights	4,000	2,500	62.50
Brea-Olinda	16,850	8,500	50.45
Dominguez	30,700	13,620	44.36
East Coyote	3,400	1,700	50.00
Huntington Beach	35,650	20,000	56.10
Inglewood	18,750	14,400	76.80
Lawndale	330	330	100.00
Long Beach	98,520	57,500	58.36
Los Angeles	1,175	1,000	85.10
Montebello	7,420	6,500	87.60
Playa Del Rey	23,050	13,000	56.40
Potrero	1,750	900	51.43
Richfield	12,075	6,100	50.52
Rosecrans	5,400	2,800	51.85
Santa Fe Springs	100,675	58,000	57.61
Seal Beach	17,910	9,800	54.72
Torrance-Hermosa Beach	10,300	6,000	58.25
West Coyote	12,670	8,500	67.09
Whittier	1,325	1,000	75.47
Total	401,950	232,150	57.76
Grand Total	1,063,600	456,700	42.94

Note: Elwood potential does not include Sespe Zone. The March potential of the state shows a decline of 9,400 barrels daily from the February potential of 1,073,000 barrels daily.

Completion Below 6000 Feet at Lawndale Would Be Important

Los Angeles.—The Lawndale field still holds some interest to operators, due to the enormous losses sustained during 1929 by major and small operators who rushed in to drill a very questionable structure. J. O. Smith has drilled No. 9 to 6366 feet and has cemented a string of 4¾-inch casing through perforations at 6250 feet to test a formation below the gas strata. The first production was developed above 6000 feet by the Smith interests, and a completion below 6000 feet would open a new producing zone. The west side of the field holds possibility of production, since the accumulation seems to have taken place where formations feather out toward the west. Upward of 100 wells were started after the discovery well was completed, but no oil was developed east of the narrow producing strip. The history of two or three fields in the Los Angeles basin indicates that there is still a chance to develop a more worthwhile production at Lawndale, but the fact that the field does not lie in line with a major producing group may mean that the small structure contains only a limited amount of oil.

Dominguez Deep Production Important as Future Supply

Los Angeles.—Shell Oil Company completed Reyes 101 at Dominguez with an initial production of 4500 barrels of clean oil from 5340 feet to establish a very good record for the lower Callender zone. The gravity of the oil was above 33 degrees and the completion further emphasizes the importance of the field as a deep reservoir. The 6⅝-inch shutoff was made at 4612 feet. The 786-foot, 4¾-inch liner included 725 feet of 120 mesh perforated, and the well was tested with 2½-inch tubing at 4960 feet.

While Union Oil Company was forced into the development of the deep zones at Dominguez, the present development has shown the importance of the field as a future supply for the Los Angeles basin. Shell Oil Company and Associated Oil Company also hold large leases in the field, but they have been less active. The lower zones have shown less water than the upper sand.

Gas was stored in the upper zone for a long time by Shell Oil Company and Union Oil Company, but this plan was abandoned when it became doubtful whether the practice was a profitable venture.

Fruitvale Drilling Activity Forcing Offsetting Campaign

Bakersfield, Calif.—Western Gulf Oil Company will drill necessary offsets in the Fruitvale field, having made two locations on Section 21-29-27. Activity on adjoining property has forced the company to protect its acreage. Recent developments in the northeastern extension have gradually spread toward the inside leases and the present drilling has resulted from completions on leases which were once thought to have been outside the producing limits of the field. Mohawk Petroleum Company's most recent completion is flowing 500 barrels of 23.7 gravity oil from 4081 feet. Such a production at a shallow depth is enough to encourage drilling by small companies. Fruitvale crude does not contain much gasoline on straight run analysis, but a much better yield can be obtained through cracking. The crude also makes a good fuel oil. All field work was suspended for a time, but the success of operations on edge leases attracted companies which were anxious to develop holdings. The field has never been an economic factor, but might fill a more important place if cracking operations continue to increase.

No Campaign to Follow Deep Oil Discovery at Torrance

Los Angeles.—Possibility of extensive drilling operations at Torrance are very remote, despite rumors that an important deep zone has been found. Higgins Brothers succeeded in placing Hamlin 1 on the pump at 4781 feet, but production was not more than 40 barrels of 22.5 gravity oil. First reports were that this well made a very high gravity oil. The cut has been reduced to 10 per cent and production from this depth is interesting, even if not very important.

Ranger Petroleum Company is still pumping Watson 1, an extension well east of the field, but the output has not exceeded 75 barrels per day. This is a significant test, but it is now believed that the well extends the Torrance field and does not open up a new area. The Torrance structure is very flat on either end and production has been obtained considerably outside the recognized limits on both extremities.

New Mexico and Rocky Mountain Area

Second Rattle Snake Dome Test Fails to Show at Expected Depth

Gallup, N. M.—Continental Oil Company and Santa Fe Corporation's second deep test on Rattlesnake Dome, San Juan County, failed to show oil, gas or water when carried to 6888 feet early this week, and plans are to deepen to 6900 feet. Munoz permit 24, located 1782 feet from the south and 145 feet from the west lines of Section 1-29n-19w, is the second well to try for production in the Delaware sand, and at the above depth is correlating below the producing horizon on Munoz 17, the discovery well. The last evidence of the oolitic lime formation in Munoz 24 was at the 6650-foot level.

Munoz 17, located 2547 feet from the north and 860 feet from the east lines of Section 2-29n-19w, produced approximately 350,000 barrels of oil from the Delaware at 6769-6771 feet before water flooded the oil formation. It was recently deepened to 6985 feet, and shut down to cement a huge cave at the latter depth. Location has been made for the drilling of Munoz permit 28, which will be a shallow test, and located 2310 feet from the south and 1320 feet from the west lines of Section 12-29n-19w.

Southern Alberta Wildcat Not Showing Favorable Indications

Lethbridge, Alta.—Joint test on the Lethbridge wildcat structure, Southern Alberta, is reported by the operators, The Texas Company of Canada, Ltd., and Imperial Oil Company, Ltd., to be somewhat disappointing. The hole is 20 feet in the Madison and is showing some water; total depth is around 4573 feet. A. R. Wilson, manager of the western division of the producing department of The Texas Company, and Hugh A. Stewart, geologist in charge of lands and leases, conferred with operators at the well on March 5. Announcements concerning decision as to future operations should be made next week.

Melstone, Mont.—According to E. N. Daly, president of Minnesota-Flatwillow Petroleum Company, operations will be resumed at the Ivanhoe dome wildcat as soon as the company's work is completed in the Devil's Basin field; this is anticipated at an early date.

Casper, Wyo.—Mutual Oil Syndicate's first operation on the Midway Dome structure, 12 miles north of Casper, is being spudded in on SW SE Section 14-35-79, a half mile to the northwest of the discovery well drilled by Midwest Refining Company and its associates. Rotary rig is to be used with fuel oil used under the boilers.

Discovery well on the structure is being rigged to pump after it is tubed with three-inch. This well was put on a swabbing test and developed 400 barrels per day of 28 gravity crude oil from the second Wall Creek sand, which is 46 feet thick. During the test the well developed so much pressure that even short shutdowns permitted the hole to fill with oil and it required hours to swab it 3400 feet in the hole, the original level at which it was kept before swabbing.

Greeley, Colo.—No activity or development of any significance or importance is reported from the Greasewood Flats field in Northeastern Colorado. Production in the three wells which are being pumped has been gradually on the decline, and the one well recently completed by Continental Oil Company, B. Gadbois 1, and then shot in an endeavor to make it commercial, swabs about 50 barrels, which is hardly worthwhile when the depth of the hole is considered—below 6650 feet.

However, in spite of the discouragements encountered recently, it is believed that several more wells will be drilled in the spring in an attempt to outline the structural tendencies of the region which, if it is ever developed, will be vast.

Dry Creek Operations Well Under Way and Making Good Progress

Red Lodge, Mont.—All operations in the Dry Creek field are well under way and making good progress. The Ohio Oil Company's Industrial 2 is drilling below 2300 feet, and Carbon Oil & Gas Company's test is drilling below 1900 feet. Both of these tests use electricity for power furnished by the Montana Power Company. The Ohio Oil Company's William Robinson 2, which if commercial, will be a western extension to the producing territory, is spudding. Carbon Oil and Gas Company's well, if it is a commercial producer, will prove additional territory to the southeast.

On the Golden Dome structure, east of the Dry Creek field, The Ohio Oil Company's Kutchinski 1 is drilling below 3285 feet. It is also a rotary operation, utilizing electricity for power.

Casper, Wyo.—Crew is building rig and moving in material to drill a test on a structure north of the Lost Soldier field. Location is in SE SW Section 34-27-90, Fremont County, Wyoming. Notice of intention to drill was filed by the Tropic Oil Company, but it is understood that actual drilling operation is to be carried on by a Salt Lake City syndicate. The well is to be near the hole abandoned several years ago at a comparatively shallow depth by Annabelle Oil Company. Structure is generally known as Bairoil structure.

Casper, Wyo.—Jarvis & MacDonald, who drilled the discovery wells in the Spindletop field southwest of Casper some years ago, have spudded in a test west of the proved field which is to be carried to the Sundance sand. The three completed wells in the field, good for about 75 barrels each, are bottomed in the Tensleep at 1020 to 1052 feet. They are the property of the Wyalta Oil Company, having been purchased from Jarvis & MacDonald about two years ago. The crude is black oil of a very good grade with asphaltic base. It is a good refining oil, and an excellent road oil almost in its natural state.

Shelby, Mont.—Interesting wildcat test of the California Company on Utopia structure, in Liberty County, Northern Montana, is making good progress drilling below 2630 feet carrying 8¼-inch casing which, it is planned, will be set around 3150 feet, above the stray sand in the black lime in which production is expected.

East Central Texas Field Notes

H. H. KING, ***Staff Representative, Fort Worth, Texas***

Noticable Increase in Field Work North and East Sections of Field

Tyler, Texas.—Approximately 100 new locations were added to the list of operations in East Texas during the week. During the same period there were about 85 completions, this stimulation of field work is partially due to many operators deferring offsets for weeks because of adverse transportation conditions.

A noticeable increase in field work is taking place along the west and north flanks. Lease owners recognize that the water table is slowly advancing upon these sectors, and any appreciable delay in developing will lessen the prospects of a return on the investment. The majority of the large owners of leases are behind schedule on offsets, and pushing their drilling programs. The long siege of bad weather, with only brief periods of relief, has swelled operating expenses, and particularly transportation costs. Some operators have elected to lag behind rather than to absorb the extra expense.

Gulf Production Company added 12 new locations to the list last week, and is retaining its rank as the second largest operator in the field by a safe margin. Magnolia Petroleum Company is one of the first of the principal lease owners to take a holiday on drilling, and late last week was operating only two rotaries, although operations on several others have been held up by high water in the river bottoms. Atlantic Oil Producing Company is scheduled to consummate its purchase of the major portion of Cranfill-Reynolds Company's properties this week, and upon completion of this deal will launch an aggressive drilling program, as scores of offsets must be taken care of. It is reported that Atlantic Oil Producing Company proposes to carry out a schedule of 15 wells per month for an indefinite period.

Included in the lease trades reported last week is the sale by H. L. Hunt et al of the Neal Cooper 16¾-acre lease, T. J. Moore survey, east of London, Rusk County, for $50,000, payable from 7/32 of the first production, to M. A. Wherrett and associates. In Smith County, C. B. Bunte, Inc., of Tyler, turned an undivided half interest in the A. S. Jarvis 85-acre lease, Juan Vargas survey, to Droppleman Development Company, Tyler, for the drilling of two free wells. The latter also assumes one-half of the $50 per acre oil payment due on the lease, payable out of one-third of the first production.

K. E. Merren & Mays' (Peoples Petroleum Producers, Inc.), J. S. Darsby 2, located on west end of 15-acre lease, W. P. Chism survey, Kilgore area and on the edge of the field, gauged 125 barrels of oil per hour via open tubing from sand at 3691-3696 feet. This well was drilled to a sub-sea depth of 3309 feet, and is free of water. This property is protected by injunction from the orders of the military. Welch & Sandler, Kansas City, Mo., completed R. W. Barnett 1, located in the north central portion of the Thos. Johnson survey, Gregg County, and on the west edge of the Kilgore area, making 69 barrels of oil on 75 minute gauge via three quarter-inch choke on tubing from sand at 3739-3743 feet. Sub-sea depth is 3321 feet. It is located on a 100-acre lease that was recently "farmed out" by Tidal Oil Company.

Use of taper tubing for the dual purpose of conserving gas production with a view of prolonging the flowing life of wells and also because of the lower cost when compared to standard size is attracting the attention of the smaller operators. Heretofore, the so-called telescope strings have been used generally by Atlantic Oil Producing Company, Shell Petroleum Corporation and Sun Oil Company. Wells & Gann Drilling Company's Hawkins 1, Kilgore area, Gregg County, was completed recently flowing 30 barrels oil per hour via taper tubing from regular sand at 3654-3661 feet. Stroube & Stroube also gave mixed tubing a trial on a recent completion. Sun Oil Company has ordered a number of strings that will be made up of 1½, 1 and ¾-inch, and is the first to introduce the three-way combination. Shell Petroleum Corporation has standardized on 1 and 1¼-inch sizes.

Upshur County Wildcat Test Nearing Critical Depth

Longview, Texas.—The semi-wildcat test of E. E. Eslick et al, on the Whitehurst 20-acres, McKinney and Williams Survey, Upshur County, and on a line between the East Texas field and the recent Cranfill-Reynolds Company wildcat producer, was nearing a critical depth early this week. Whitehurst 1 logged top of the Austin chalk at 3616 feet, and was coring at 3640 feet. Although scheduled to be the first of a group of tests authorized to reach the Woodbine horizon after the new pool was uncovered, Whitehurst 1 is not generally believed to be on the same structure.

Cranfill-Reynolds Company et al's discovery well on the

East Texas Production

Official data on proration enforcement in the East Texas field, as compiled each day by the military authorities, is listed below for the past week:

Period ending 7 a.m.	Total wells completed	Wells reporting prod.	Wells not reporting: Wells off prod.	Wells not reporting: reporting	Pipe line runs	Total production	Daily average per well
February 28	4316	4165	45	106	.....	304,329	73.0
February 29	4324	3827	226	271	97,472	283,327	73.5
March 1	4335	4111	65	159	204,490	302,185	73.5
March 2	4348	4174	51	123	357,206	309,201	74.0
March 3	4360	4089	46	225	260,034	300,984	73.6
March 4	4368	3954	36	378	285,474	290,044	73.4
March 5	4377	4232	47	98	296,373	311,481	73.6
March 6	4383	....	..	..	430,508	293,335	74.4
March 7	4393	4178	133	192	87,615	306,627	73.7

Note—Pipe line runs include receipts plus crude used as fuel and road oil and for washing in wells.

M. L. Rash farm, E. N. Eubanks Survey, will not flow by heads regularly each day unless from 10 to 25 barrels of oil is pumped into the hole from lease tanks. This circulation method is enabling the well to yield about 100 barrels of oil daily, including the returned crude. The well made about three per cent salt water with the oil. It is producing from Woodbine sand at 3709-29 feet, with a surface elevation of 332 feet.

Drilling of a test to be located a short distance north of the discovery well is to follow the sale of the west half of the north 200 acres out of the D. F. Smith 278-acre tract, John Denson Survey, by Cranfill-Reynolds Company et al to Hugh Wilder, Pat Hudson and Pete Johnson for $1000 per acre, payable out of one-fourth of the first production. J. C. McFarland et al's Willie Starr 1, located on 96-acre lease, C. H. Cooper Survey, and about two miles east of the producer, has spudded and shut down. J. K. Wadley, J. P. Evans et al have awarded drilling contract to R. G. Smitherman of Shreveport for a test to be in the northeast corner of the Oliver 160-acre tract, Sophia Sanders Survey, paying $7500 cash, and assigning lease on the Bland 40 acres, S. Williams Survey. An additional cash sum will be paid to the contractor in the event casing is run. This wildcat is about six miles northeast of the producer on the Rash land, and a short distance southeast of a dry hole.

Wood and Nelson, Gilmer operators, encountered salt water when drill stem test was made at 3666-3712 feet in H. S. Coslett 1, a wildcat on the B. F. Howard Survey, Upshur County, about midway between Gilmer and Big Sandy. The hole was deepened to 3740 feet, or 3314 feet below sea level, and preparations made to survey the hole.

Proration Violators to Face Prosecution in East Texas

Longview, Texas.—Operators in the East Texas field that get caught exceeding proration quotas and at the same time fail to settle in full for royalty production interests are to be confronted with indictments and prosecution by civil authorities.

Heretofore the military forces on duty in the field have been unable to go further than to shut in proration violators, due to lack of co-operation by the civil courts.

The recent discovery of a by-pass arrangement on a well situated on school property at Gladewater that is alleged to have permitted the withdrawal of a large volume of oil in excess of the 75-barrel daily quota has resulted in a grand jury investigation being launched by Gregg County authorities. Proration violators have become bolder in their operations lately, and a standing threat of prosecution by civil authorities for felony and embezzlement has been needed by the military to deal with repeaters.

Royalty owners that have been victimized by violators are aiding the authorities in this activity.

Marshall, Texas.—Oil News Publishing Company's Pickering 1, G. H. Patterson Survey, Shelby County, only a short distance from the Louisiana line, was swabbing oil with some salt water through two-inch tubing set with packer at 1508 feet in Nacatosh chalk, Saturday, March 5. Before the tubing was run the well had flowed salt water with only a trace of oil. Previously the well had stood full of oil of 38 gravity, after bailing to bottom and standing overnight.

After getting an oil show at 1495 feet in chalk, several weeks ago baroid had to be pumped into the hole to hold in the gas pressure and eight-inch casing was cemented at 1463 feet. Drilling in of the well was delayed several weeks. Several scouts believe the water is coming from below the casing but above bottom. Marl was cored from 1495 to 1498 feet and later drilled to 1508 feet in chalk.

One mile southeast of the test, Fuller and O'Brien Brothers have made location for Frost-Johnson 1, Aaron Castleberry Survey.

Wildcat Work in Many Parts of West Texas Showing Increase

San Angelo, Texas.—An intermediate producer between the Hendrick field, Winkler County, and the OBrien area, Ward County, was in process of completion early this week when Sid Richardson et al's S. M. Halley 1 scored 1000 feet of oil in hole with light gas flow at a total depth of 2928 feet. This semi-wildcat is located 330 feet from the south and 1650 feet from the east lines of Section 25, Block B-12, P. S. L. Survey, Winkler County, and several miles east of a small pool uncovered in October, 1928, by Richardson and others. Richardson et al own substantial royalty interests under the O'Brien ranch, and the above test is the fourth drilled on as many borders of the ranch in an effort to stimulate development work by forcing offsets. Halley 1 began showing oil and gas at 2810 feet, and scored increase in broken sand and lime at 2870-76 feet. The hole will be deepened after a bailing test is made at the present depth, which is 216 feet below sea level.

The Ector County wildcat test of Weekley Oil Corporation, Casteel and McCurdy on the E. F. Cowden ranch, Section 33, Block 43, T-2-S, T. & P. Ry. Survey, was drilling in hard lime below 4280 feet without registering an increase in oil or gas. It has a surface elevation of 2971 feet, and is now considered near the sulphur water horizon. This wildcat encountered a light flow of gas and traces of oil in the upper section of the big lime, and because of these developments was rated as a potential discoverer of a new pool.

Partial revival of lease buying in the form of wildcat checkerboard acreage and drilling blocks at scattered points in West Texas has been followed by a slight gain in new wildcat operations. Locations have been staked recently for tests in Presidio, Coke, Borden, Glasscock, Loving and Runnels Counties. In addition to this activity work is under way in Crockett County on the creation of a unitized block to drill an Ordivician lime test, with a major company in charge of the operation. The latter would drill below the 7000-foot level to try for production similar to that obtained from the 8500-9000-foot prolific wells in the Big Lake field.

Marlin, Texas.—Facilities have been completed for marketing of the output of Dixie Oil Syndicate's discovery well on the J. Lee Davis farm, Falls County. A two-inch line has been built from the well to a three-car rack on the Southern Pacific Railroad at Gurley, and initial shipments are scheduled to be made this week. This wildcat producer was brought in January 30 from Georgetown lime formation at 1000-1002 feet. Casing and tubing has since been installed, and a recent production gauge credited the well with flowing 365 barrels of 35 degree oil in 23 hours.

Nelson and associates have acquired a 10-acre lease from the owners of the discovery well for $500 per acre cash, and will drill a test immediately about 1000 feet northwest of the producer. New developments have been slow in following this wildcat completion, as Dixie Oil Syndicate's drilling site consisted of 2250-acres involving only one fee ownership, and competitive drilling was automatically eliminated.

South Texas Field Developments

EARL POST, ***Staff Representative, San Antonio, Texas***

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New Crude Contract Acts as Spur To Starr County Shallow Drilling

San Antonio, Texas.—Los Olmos shallow district of Starr County is receiving an active drilling campaign as a result of a contract made with producers by W. H. Campbell of Wichita Falls who is to pay 75 cents a barrel at the well for at least 300 barrels daily from these "grass root" wells and to build a pipe line and lube oil plant. He will build a cracking plant as soon as production is sufficient to justify it.

The contract is effective April 1, and Mr. Campbell is to build field storage before that time. A two-inch line from this field to a refinery at Fort Ringgold, near Rio Grande City, a distance of 12 miles, will be in operation by May 1. If production of the field nears the 1000-barrel a day mark, another line will be laid and the present one used for water. Mr. Campbell also has made a contract with The Texas Company to take production from its Roma wells, also in Starr County, producing from 3600-foot horizon.

A three-fourths mile due south extension was provided to the field by J. A. Tarver's A. K. Bass 2, Section 76, Block 7, Carmargo Survey, which topped the sand at 458 feet and filled 300 feet with oil in 15 minutes. Casing has been set and the well is being drilled in.

Los Olmos Oil & Gas Company's Kelsey Bass 9 (10), Section 6, is producing 20 barrels from 330-340 feet. H. H. Davis' Kelsey Bass 2, Section 6, is producing 15 barrels from 474-85 feet.

Two and one-half miles northeast of Rio Grande City, Heard and Heard have taken over the Sioux Oil Corporation's Goodrich 1, Tract 5, Porcion 81, and have encountered a sand at 1358-70 feet. Casing has been set and it will be drilled in within a few days. It is several miles south of the Los Olmos pool.

Bastrop County Test Well Will Penetrate 50 Feet of Austin Chalk

San Antonio, Texas.—Humble Oil & Refining Company and Sun Oil Company's Powers et al 1-B, Bastrop County, drilling in Taylor marl at 3918 feet, will be drilled at least 50 feet in the Austin chalk, which is expected to be encountered around 4100 feet or below.

This well is a joint venture, the Sun Oil Company holding 65 per cent of the interest and the Humble Oil & Refining Company the remaining 35 per cent. It is 400 feet from the north and east lines of Block 197, Bastrop Townsite Survey, four miles northeast of the town of Bastrop.

No other operations have been drilled to the chalk in that area.

Heaving Shale Ruins Goliad County Wildcat's Possibilities

San Antonio, Texas.—Heaving shale ruined the possibilities of production for another South Texas wildcat: Benedum and Trees and Plymouth Oil Company's Parks 1, in the southeast corner of the BS&F Survey No. 8, Goliad County, has been abandoned at 4555 feet. This well had a sand from 4543 feet to the bottom of the hole, but heaving shale about the same prevented its completion. A number of attempts were made to cement off the shale.

The same fate fell to Benedum and Trees and the Gibson Oil Company's Parks 1, 2900 feet northwest, which had a showing at this level several years ago.

Location has been made by the Plymouth Oil Company for its second test, 500 feet south of the first. Derrick is being skidded to the new location.

Test Shows for Gasoline Well In Town Block Sector of Refugio

San Antonio, Texas.—Edwin M. Jones' Josephine Mitchell 1-B, in the northwest corner of a 200-acre tract in the town blocks of the Refugio field, cored 125 feet of sand to 6430 feet and showed for about a 150-barrel gasoline well. The test, however, drilled through the formation and is now below 6543 feet. No definite announcement has been made of how deep the test will be drilled.

The well cored a broken sand and shale from 6305 feet to 6378 feet, at which depth it cored a solid sand to 6430 feet. A drill stem test of 20 minutes showed 400 feet of mud and gasoline and developed 775 pounds pressure with one-fourth-inch chokes at top and bottom. A water sand was found at 6446-80 feet, below which the bit went into shale, the formation now being drilled.

In the northern part of the county, Humble Oil & Refining Company is drilling M. V. O'Conner 2, 933 feet north and 75 degrees west of O'Conner 1, at 2100 feet. O'Conner 1, also in the Keathing Survey, is being worked over after sanding up. It was a producer at 4155 feet.

Showing in 4500-Foot Horizon Leads to Activity in Saxet Field

San Antonio, Texas.—Considerable activity is reported in the Saxet field of Nueces County as a result of the showing of the 4500-foot producing horizon.

Gulf Coast Oil Company's Perkins and La Gasse, Section 26, Shepherd subdivision, is a derrick. Kepley Production Company and associates' Speer and Hocker, Speer and Driscoll lands, is rigging up. Rutherford Drilling Company's Turner 1, two locations northeast of the Gulf Coast Oil Company's recently completed Sedwick 2, is preparing to spud in.

Among the drilling wells are the Houston Oil Company's McGregor 1, Survey 311, which is making hole below 4250 feet, and the Saxet Oil Company's Dunn 6, below 5790 feet.

John F. Camp and Stanolind Oil & Gas Company's King 1, six miles north of Agua Dulce field, is the only active drilling wildcat. It is waiting on cement after setting 505 feet of surface casing. This well is 600 feet from the north and west lines of Section 23, Richard King Farm Lot subdivision.

San Antonio, Texas.—Evans and Gant's Jeff Love 2, Section 1593, Kerr County, is underreaming to reset 5 3/16-inch casing at 5879 feet. The well recently had a showing at 5835-39 feet, but developed considerable water after being deepened to 5849 feet. Casing was run to the bottom of the hole and a collar installed to cut off the water. Casing is again being lowered to cut off the water.

Gulf Coast Field Developments

JACK LOGAN, ***Staff Representative, Houston, Texas***

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Cranfill-Reynolds Company Gets Oil at 4124 Feet at Esperson Dome

Houston.—Cranfill-Reynolds Company's Davis 4, a workover well in Esperson dome field of Liberty County which was scheduled to test sand found in Davis 7 at 4550-78 feet, has been completed for 380 barrels of 25.4 gravity oil at 4124 feet.

Completion of Davis 4 adds the seventh well for Cranfill-Reynolds on the Davis 800-acre tract at Esperson. The oil is flowing through a three-eighths-inch choke on 2½-inch tubing. Thirty-three feet of Layne and Bowler screen was set in the hole.

Davis 4 originally was completed for a flush yield of 115 from the sand at 2350 feet. It passed up the 3000-foot sand when deepening, but logged a sand showing oil at 3796-3807 feet. The sand from which the workover was made to produce this week was topped at 4089 feet. It tested 1125 feet of oil in five minutes.

Cranfill-Reynolds Company has announced two new locations. Moores Bluff 9 will be drilled 500 feet from the north line of the Moores Bluff lease and in line with Davis 6 and Moores Bluff 6 in the M. Duncan Survey. Esperson 20 will be drilled on a site 470 feet from the west line and 510 feet north of Esperson 5 in the Esperson A lease, C. W. Fisher Survey.

Harris County Without Active Wildcat After Lobit Abandonment

Houston.—Harris County is without an actively drilling wildcat after abandonment this week of H. H. Givens et al's Lobit 1, near Addicks, eight miles west of Houston. Lobit 1 was abandoned in soft, brown, sandy shale at 3365 feet. The only encouragement was a slight gas show at 2933 feet.

Wood R. Alexander et al's Hermann Hale 1, the only other pure wildcat in the county, is standing at 2720 feet, but will resume drilling before March 15, according to the operators. This well is located in the R. A. Hanks Survey.

Shell Making Rapid Progress On Offsets to Iowa Discovery Well

Houston.—Shell Petroleum Corporation has been making rather rapid progress in drilling its two locations offsetting the Iowa field discovery well, Southern Louisiana. Both tests are below 5000 feet, one with casing cemented, and the other preparing to set. They have as objective the sand from which Magnolia Petroleum Company's (formerly Vacuum Oil Company's) Bert T. Waite 1 is producing at 6958 feet.

The casing program calls for setting 9⅝-inch pipe through an oil and gas sand found around 5000 to 5050 feet, so as to protect the wells from blowouts from that horizon. It is contemplated that eventually, after depletion of the 7000-foot sand, whipstocks may be set above the shallower sand and completions be made in it.

Early this week Shell Petroleum Corporation's F. Heyd 2, located 450 feet south of the Iowa discovery well, and like the latter, in Calcasieu Parish, was still standing cemented after 9⅝-inch casing had been set at 5129 feet. Oil sand had been cored from 5000 to 5020 feet, but the full thickness of the sand was not cored. The well started drilling January 29.

The same company's O. A. Fontenot 1, 450 feet east of the discovery well and across the parish line, in Jefferson Davis Parish, early in the week was reaming to set 9⅝-inch casing at 5146 feet after coring oil sand from 5020 to 5040 feet. It started drilling February 15.

Waite 1 is still flowing around 500 barrels pipe line oil daily through a 13/64-inch choke, producing 41 gravity oil, and the pressure remains high.

Slight Easterly Extension of Production Likely at Lost Lake

Houston.—Although failing to get commercial oil production in the sand which it discovered at 1873 feet in January on the east flank of Lost Lake dome, in Chambers County, it begins to look as if The Pure Oil Company's Mayes 14, 650 feet east of production, will make an oil well at 2800-13 feet.

Mayes 14 tested the 13 feet of formation at 2800-13 feet early in March and got 11 fourbles of oil and three joints of mud and sand. A sample of the oil tested 21.2 gravity, corrected. At 2733 feet Mayes 14 had a slight showing of oil in sand, shale and shell.

Only One Active Drilling Well Left in Damon Mound Oil Field

Houston.—Abandonment this week at Damon Mound of Layne-Texas Company's Wisdom 6, a workover, in oil sand at 3609 feet after a futile attempt to pull screen and clean the hole of junk, left only one active operation in the field, The Texas Company's William Cave 2, which is drilling below 3440 feet after having cored negatively at 3420-25 feet, 3430-35 feet, and 3435-37 feet.

Layne-Texas Company will soon be active at Damon Mound again, however, for along with abandonment notice of Wisdom 6 was announcement of a new location, Wisdom 9 has been staked in Lot C, Block 62 of the A. Darst Survey.

Yount-Lee Oil Company Completes Workover Well in High Island Field

Houston.—Yount-Lee Oil Company this week successfully worked over Cade 25 at High Island, Galveston County, for an initial of 425 barrels of 31 gravity oil from a formation at 5372-5447 feet. Seventy-four feet of 3½-inch screen was set. Pressure recorded on the quarter-inch choke was 550 pounds, compared with the 150 pounds pressure when the well originally was completed.

Completion of Cade 25 leaves Yount-Lee Oil Company with three active operations in the field. Cade 26 is drilling below 3000 feet after having set 10-inch casing at 1320 feet; Cade 27 is rigging up, while Broussard & Orme 1 is drilling below 3600 feet.

Second Well at Manvel Due to Determine Production Trend Soon

Houston.—The Texas Company, discoverer of Manvel field in Brazoria County, is making up three-inch tubing and preparing to set screen in Belcher 2, the test which is expected to determine whether the production trend at Manvel will take a southeasterly course from the discovery well.

Belcher 2 cemented 9⅝-inch casing late in February at 5550 feet, just above an oil sand. After the cementing job was pronounced satisfactory, the well cored ahead, finding a continuation of the rich oil sand in a core pulled from 5585-88 feet. The formation previously had shown for oil at 5470 feet, 80 feet above the point at which the casing was set. When the well was 5572 feet deep, a drill stem test showed 1500 pounds of gas and a small amount of oil in two minutes and 15 seconds.

Belcher 2 is located 1000 feet southeast of the discovery well, which had a depth of 5494 feet.

Possibility of Record Depth Production Looms at Evangeline

Houston.—Yount-Lee Oil Company may establish a record depth for production in the Texas and Louisiana Gulf Coast during the coming week if the test of an oil sand bottomed at 8678 feet in Housierre Latrelle 10 at Evangeline, Acadia Parish, Louisiana, is successful.

Housierre Latrelle 10 entered a hard sand showing oil at 8650 feet, and then set five-inch casing at 8640 feet. March 8 the operators were setting a strainer in the well.

Heep Wildcat Is Nearly 1000 Feet Short of Critical Depth

Houston.—Heep Oil Corporation's R. L. Cartwright 1, Montgomery County wildcat located 1½ miles northeast of G. W. Strake's South Texas Development Company 1, discovery well of the new oil field near Conroe, was drilling below 3050 feet March 8, leaving nearly 1000 feet to be drilled before it reaches the depth at which Strake's well found production.

R. L. Cartwright 1 is 450 feet east of the west line and 330 feet north of the south line of a 548-acre tract in the John A. Davis Survey. Heep Oil Corporation holds lease on the north half of this tract.

Jasper County Wildcat of Hext Drilling Company Reported Showing

Houston.—Considerable interest was manifested during the past week in a reported showing of oil in Hext Drilling Company's wildcat well four miles southeast of Jasper in Jasper County. This company's Flournoy 1, located 776 feet from the south and east lines of the B. F. Jones Survey, was reported showing oil from 3985-97 feet and was preparing to set 6⅝-inch casing somewhere above the show.

Deep Matagorda County Test Has Difficult Fishing Job

Houston.—United North and South Development Company, which has been putting up a plucky fight for deep production in the Buckeye townsite district of Matagorda County, may have to throw in the sponge for its Stoddard 1 after all. Stoddard 1 has gone fishing at 7741 feet, and fishing at that depth in the Texas Gulf Coast is tough on bait.

Stoddard 1 picked up the top of the Upper Oligocene (Marine) at 6634 feet after logging a gas show at 5474-5512 feet and a slight oil show at 5675 feet. A drill stem test of the latter failed. The well is 150 feet west and 545 feet north of the southeast corner of Lot 53, Buckeye Townsite, J. C. Keller Survey. It is one of the deepest tests ever drilled in the Gulf Coast territory.

Some consolation for the above misfortune is found in developments this week in the company's F. L. McDonald 1 at Markham, Matagorda County. This well tested 12 joints of mud and oil, 20 joints of oil and 20 joints of mud in two minutes. The test was made at 3581 feet.

Deering and Thomas Take Over Wildcat in Lockridge District

Houston.—John Deering and C. S. Thomas of Houston, independent operators, have taken over W. D. Southerland et al's C. W. Chapman 1, in the Lockridge district of Brazoria County, and are moving in a heavy rig to deepen from 1514 feet, at which it has been standing for some time.

C. W. Chapman 1, which was stopped in shale and gumbo at the above depth in February, is 294 feet from the south line and 104 feet from the east line of Lot 2, Andrew Robinson Survey.

Gas Showing Reported in Wildcat Test Located Near Bleiberville

Houston.—Great Southern Drilling Company, drilling what was formerly known as Pomical & Boletka's F. Schovajsa 1, wildcat three miles south of Bleiberville, in Austin County, is drilling ahead below 1200 feet after a slight show of gas in shale at 1100 feet. The well is 329 feet north 78 degrees east of the north corner of the B. Dougherty tract, in the Stephen F. Austin Four League Grant.

Humble Denies Buying Strake's Holdings in Montgomery County

Houston.—Humble Oil & Refining Company March 8 denied it had purchased holdings of Strake Oil Corporation in Montgomery County. Rumors had it that this company had purchased the Strake holdings in the new field recently discovered near Conroe for considerations running from $100,000 in cash and $1,500,000 in oil to $1,500,000 in cash and $3,000,000 in oil.

The Texas Company Due Two Barbers Hill Completions

Houston.—Two wells of The Texas Company at Barbers Hill are due for completion during March. This operator's Wilburn 6, a workover, at latest reports was drilling at 4910 feet in sand and shale showing oil. It had previously recorded shows between 4870-82 feet. The Texas Company's Wilburn 8, which spudded late in 1931, was drilling in a sand topped at 4380 feet which was showing oil.

Houston. — Coastwise shipments of Sun Oil Company from Sun and Sabine Pass totaled 1,450,306.91 barrels during February.

LOUISIANA-ARKANSAS

▼ ▼ ▼

Spring Ridge Test Shows Oil And Salt Water in Gas Blowout

Shreveport.—After cutting a nine-foot core after topping sand and while operators were bringing drill stem out of the hole preparatory to a drill stem test, Frank Foster, Incorporated's Stevens 1, NE NW NW Section 20-9-11, Sabine Parish, three-quarters of a mile southwest of the discovery well which is the only producer of the Spring Ridge oil district, blew out Monday, March 7, making an estimated 20 to 25 million cubic feet of gas with a slight trace of oil and a slight show of salt water, the latter believed to be coming from the Blossom encountered just below 2235 feet. Total depth of the present test is 3357 feet; elevation is 269 feet.

The discovery well of this area, Langbridge Oil Corporation's Stevens 1, SE NE Section 17-9-11, was completed last fall flowing 40 barrels of 39.1 gravity oil daily from sand at 3366-69 feet; elevation was 313 feet, showing that the present test is slightly lower structurally. The discovery well was drilled to 3326 feet and plugged back to the 3366-69-foot level. It had barely enough gas pressure to flow. The producing horizon is believed to be near a contact of the upper and lower Cretaceous, probably in the latter. The sand appeared under three feet of cap rock, logged at 3345 feet.

The present test logged chalk at 1765 to 2235 feet, passing into the Blossom at that level. Baroid will be pumped into the well to kill the gas flow and 6⅝-inch casing will be set for a test. Six fourbles of pipe had been taken from the hole Monday when the blowout occurred. The well is on a 4080-acre block recently acquired by Frank Foster, Incorporated, from Langbridge Oil Corporation, which retained the discovery well and 120 acres around it. These tests are about seven miles south of Pleasant Hill oil production and five miles north of the Zwolle chalk and marl oil producing field.

Zwolle Drilling Operations Show Gain; Three Abandoned

Shreveport.—Eight new locations were announced in Zwolle last week, giving this field a net gain of five in number of operations to bring the total to 41. Three dry holes comprised the completions list for the last week.

Five of the new locations were in Section 12-7-11, in the southeast part of the east field, one was in Section 11-7-11, one in Section 14-7-11, in a recently opened south offshoot of the southeast part of the field and the other, by The Ohio Oil Company in Bowman-Hicks 9, was in Section 36-8-12. Eugene Palmer and J. E. Smitherman made three locations in Section 12-7-11, all on Louisiana Long Leaf Lumber Company land.

Two tests in the recently opened southwest sector of the Zwolle townsite part of the field will be abandoned by Southland Drilling Company. F. Martinez 1, NE NW Section 11-7-13, is a quarter mile northwest of a test recently completed on the same lease by Rush and French in the same section which flowed at the daily rate of 3000 barrels of oil through choke for a while and then went to salt water and then dead, later being revived making 800 barrels of fluid daily, half salt water. A dry hole at total depth of 2500 feet in chalk. Patterson 1, SW SW Section 2-7-13, will be abandoned at 2534 feet. The Texas Company has cemented 6¼-inch casing at 2115 feet in Giaque B-1, NE SE Section 10-7-13.

Small Gasser Completed in Trinity Off Bellevue Flank

Shreveport.—The upper Trinity zone of the southwest flank of the Bellevue shallow structure in Bossier Parish yielded another small gasser last week when H. I. Morgan's Strange 1, NE SW SW Section 23-19-11, was completed at 1814 feet, gauging six million cubic feet of gas with 720 pounds rock pressure.

J. J. Potts' Robertson-Reed 1, Section 11-18-4e, Ouachita Parish, Monroe gas field, was completed at 2240 feet, gauging two million cubic feet of gas with rock pressure of 715 pounds. In Union Parish, in the Monroe gas field, Southern Carbon Company has made location for Fee 58, Section 17-20-4e. J. K. Wadley and associates have rig up and are waiting orders for Matthews 1, Section 11-23-9, Webster Parish.

United Gas Public Service Company has assembled a block of about 5000 acres of wildcat land centering around the town of Mer Rouge, Morehouse Parish, for an early test.

Shreveport.—John James, Trustee, has resumed drilling in Fordyce Lumber Company 1, Section 11-9s-15w, a Dallas County, Arkansas, wildcat, and last week was drilling hard sand at 2522 feet. One new location was announced in Arkansas last week, Drillers Oil & Development Company's J. A. Heney 1, NW SE Section 1-17-16, a semi-wildcat in Union County.

▼ MISSISSIPPI ▼

Jackson, Miss.—Bay Springs Petroleum, Incorporated, having reached contract depth of 3400 feet in J. H. Kayes 1, NWNE Section 21-2n-10e, Jasper County, Central Mississippi, has temporarily abandoned the test at 3408 feet, still in Wilcox.

In the same county Thomas H. Robinson has blocked 16,000 acres of leases on a magnetometer high, the block centering in townships 3 and 4 north and ranges 12 and 13 east, around the village of Paulding.

Jackson had no new completions or locations last week. A quarter of a mile northwest of Gulf Refining Company's Rainey A-1, Section 13-5-1e, Rankin County, Henslee and associates' Tanner 1, 975 feet west and 250 feet south northeast corner Section 14-5-1e, Rankin County, an edge test, has cemented six-inch casing at 2394 feet, with tentative top of the black shale 2285 feet and top of the chalk tentatively set at 2393 feet.

United Gas Public Service Company is reassigning back to Gulf Refining Company some of the tracts in the Jackson area that the former company took gas rights to over a year ago. Gulf Refining Company has under geological and geophysical option for leasing such tracts as desired an estimated 500,000 acres of cut-over timber land held by lumber companies in South Mississippi.

B. D. Moore is paying rentals on a block of 9000 acres in which he holds half interest with The Pure Oil Company in Clarke County, East Central Mississippi, on which block The Pure Oil Company drilled a 2200-foot test several years ago. Last fall in Clarke County Gulf Refining Company secured a show of heavy oil at 3700 feet in the Eutaw in the second of two tests drilled below 4500 feet.

This Wildcat Probably Sets Record For Hard Luck and Labor Lost

By FLOYD SWINDELL
Staff Representative

THIS is a tale of hard luck. It deals with "Pattison's Folly," or "Pattison's Monument," as you choose. If, after reading this story, there are those who say that J. L. Pattison's McDuff 1 did not set an all-American record for hard luck, let them speak, or forever after hold their peace.

And yet, few outside Oklahoma would have realized from reading the first drilling report of 1932 that the item—"J. L. Pattison's McDuff 1, SWc NW NE Section 32-9n-16e, abandoned in Arbuckle lime at 5902 feet"—described the end of one of the most interesting tests ever drilled in the state.

Mr. Pattison, a man in his fifties who made a fortune in West Texas and later sunk it drilling dry holes, had learned from experience that it "paid to drill 'em plenty deep." So after being forced to abandon one well on the McDuff prospect at 4505 feet, he skidded the derrick 700 feet and spudded McDuff 1, July 20, 1927, and settled down to make a bonafide test of the perfect dome which geologists had mapped on surface beds and which geophysicists had checked and double checked.

Kaleidoscopically one sees that about every kind of fishing tool ever marketed—and some that were not—and some that were made by Mr. Pattison have been sent into the hole. Further, one sees that the rig was on fire three times; the bull wheel shaft broke, ruining a new drilling line; two balers were lost in the hole; 240 quarts of nitro-glycerine dropped into the hole when a torpedo line broke; three strings of tools were lost in the hole at one time; bridges rebridged; casing parted below 3500 feet;—and so on, ad nervous prostration.

Plenty Fires

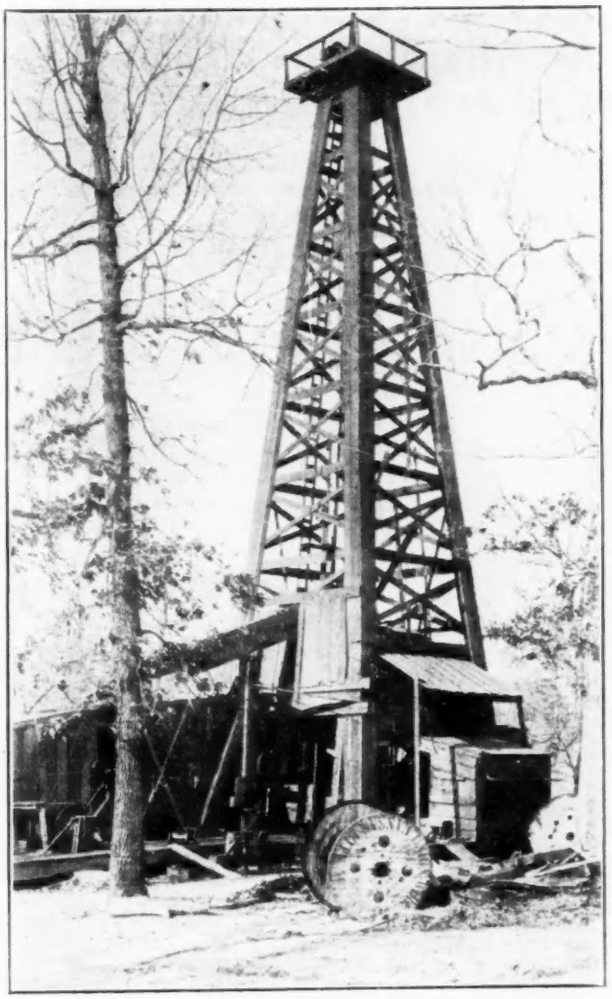
Drilling had hardly gotten under way in the McDuff when an unexpected gas show at 385 feet, became ignited and set fire to the rig, burning the end of the walking beam, the roof, and scorching the wooden derrick. But it came through needing only minor repairs. One fire department made a run of more than 20 miles.

Twice thereafter, the rig was fired, first while drilling at 1900 feet, and again while drilling Cromwell sand at 4405 to 4425 feet. Miraculously, the derrick came through and was still in use at the time of abandonment. Admittedly, this was exceptionally hard luck, but it pales into the background when the record of subsequent events is seen.

On December 28, 1927, while coming out with the tools, the steel bull wheel shaft broke near the middle, jerking 6000 feet of new drilling line up into the derrick in a tangled mass. The line had to be cut in 39 places before it could be removed. The tools were stopped after a short drop. Six-inch casing was set at 4373 feet, after underreaming the hole from 2900 feet to the casing point and carrying each joint.

After having had showings of oil and gas in the upper portion of the Simpson formation, a dolomite was logged from 5520 to 5544 feet. It was decided that the formation should be shot at this point. Going into the hole with 240 quarts of nitro-glycerine, the torpedo line broke, dropping the shell to bottom. The bailer was run in to determine the exact position of the shot. While going in, the sand line broke, dropping the bailer on top of the 240-quart shot but not transmitting enough shock to discharge it. The bailer was recovered, and within a few hours thereafter the shot was discharged by the high bottom hole temperature, which had reached 193.4° at 5280 feet.

Tools were then run into the hole and a bridge located at about 3200 feet. This was tamped down to bottom, but on the next run with the tools it was found that the bridge had raised, and it was again encountered at about 3200 feet. This operation was repeated several times, but each time the bridge came up the hole as the tools were removed. Several days were lost before it could be made to stay on bottom.



J. L. Pattison's McDuff 1 at the time of abandonment. This is the derrick which survived three gas fires

On July 1, 1929, the stem broke just above the box. Pattison went in with milling tools, milled a pin on the stem and recovered the tools with a slip socket.

It would seem that after such tribulations, the hole might be completed with no further difficulty. But the fishing job which was soon to follow probably set an all-American record. Twenty-nine days later the tools were lost inside the five-inch casing at about 3200 feet, some 1700 feet above the point at which that string was set. A fishing string was lost while trying to recover the first, and a few days later a second fishing string was lost, making three lost strings

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of tools inside the five-inch casing. The last string was lost when the line broke 800 feet above the socket.

The first move was to try an get hold of the line but this was unsuccessful, and Pattison made a special cutting tool, went in and chopped up the line and removed the fragments with a sand pump. The upper string was then recovered with a slip socket.

After fishing several months and getting nothing but "nibbles," it was decided to pull the five-inch casing which was set at 4963 feet. This string parted at about 3500 feet, leaving a little more than 1400 feet of pipe in the hole.

When the casing had been pulled it was found that the two strings of tools were securely wedged inside, so securely in fact, that a cutting torch had to be used in removing them from the casing. The lower joint of seamless pipe was broken in a perfect spiral from one end to the other, making a crack about one-quarter inch wide.

An all-thread steel nipple was placed on the end of the five-inch casing and the string run down to the top of the 1400 feet of pipe which had been left in the hole. By the use of chain tongs and man power, Pattison screwed the nipple into the top of the lost string and was successful in making a connection through which the well was swabbed several days without injury to the swab. The 11-month job was finished June 30, 1930.

The McDuff test is almost as interesting from a geological viewpoint. As heretofore stated, it is located on the crest of a perfect surface dome on the Savannah sandstone. The structure, locally known as the Canadian Anticline, is located in northern Pittsburg County in an area whose carbon ratio is so high that it is condemned by many geologists as a possibility for anything other than coal or gas. The amount of oil found in the several sands probably exceeds any showings that have been encountered in other areas of equally high carbon ratio.

Based on a study of the cuttings the formations encountered below the Atoka were as follows:

Base of the Atoka	4050 feet
Morrow	4050-4405
Cromwell sand	4405-4525—Show of gas
Caney shale	4525-5030
Woodford shale	5030-5084
Hunton	5084-5213—Two barrels corrosive water at base.
Sylvan shale	5213-5262
Viola limestone	5262-5300—Temperature at 5280 ft was 193.4°F.
Simpson limestone	5300-5340
Wilcox sand	5340-5456—Show oil 5415 and 5456 ft.
Dolomite	5456-5460 H.A.H.
Wilcox sand	5460-5520—Show oil 5480 feet.
Dolomite	5520-5544
Green shale	5544-5700—Some streaks of frosted sand.
Sand	5700-5725
Limestone	5725-5735—Show oil 5730 feet
Limestone and green shale	5735-5805—(Everton of Arkansas?)
Arbuckle limestone	5805-5902—Total depth.

Of the four years and five months since spudding, the first two years were spent in continuous drilling and fishing, 24 hours each day. During the remaining period only day tours were observed. Pattison estimates that a total of three years of 24-hour days were consumed in drilling and fishing, during which approximately $225,000 was spent in connection with the venture. The startling figure of $41,000 was spent for wire line and cordage alone.

Completions for Past Week in U. S. Fields

▼ ▼ ▼

CALIFORNIA

Company, Well and Location—	Initial Production Bbls	Depth
FRUITVALE—		
Mohawk Pet. Co., No. 8, 21-29-27	600	4080
Ohio Oil Co., R. G. C. 12	500	4180
PLAYA DEL REY—		
West Coast Pet., Combinations No. 5	100	6165

KANSAS

Company, Well and Location—	Initial Production Bbls	Depth
BARBER COUNTY—		
Barbara Oil Co., Carter 4, ne c sw ne 11-33-13w	*	4927
Derby Oil, Berscheidt 1, nw ne se 1-20-11w	60	3302
COFFEY COUNTY—		
Aikman and Young, Strickland 1, nw sw sw 14-22-13e	60	1860
COWLEY COUNTY—		
Sooby et al, Cavit 1, c ne se 9-32-5e	¶½	610
McKnabb et al, Hutto 1, lot 10, Blk 18, Reynolds Addn., Winfield, 22-32-4e	800	3297
Knox Drlg. Co. et al, Matt'son 1, lot 11, blk 44, Musgrove Addn., Winfield	120	3285
Dan Patton et al, Sitton 1, nw sw nw 29-31-6e	150	2914
Whitter et al, Cassaoday 1, ne c sw 19-34-3e	*	1480
McPHERSON COUNTY—		
Syndicate Oil et al, Becker 4, nw se se 36-19-2w	1350	3395
Syndicate Oil et al, Becker 3, nw ne se 36-19-2w	1085	3395
Olsen Drlg. et al, Koehn 5, ne sw sw 36-19-2w	¶½	2942
SEDGWICK COUNTY—		
Magnolia Pet., Wheeler 7, ne c 19-27-2e	300	3224
Derby Oil, Eastborough 1 (owd) cwl se sw ne 19-27-2e	350	3253
Continental Oil, Smith 1, ne c se 16-25-1e	420	2613

OKLAHOMA

Company, Well and Location—	Initial Production Bbls	Depth
CARTER COUNTY—		
Carter Oil, Lynn 1, sw se ne 31-1s-2w	175	2073
COAL COUNTY—		
Mid-Western O&G, Hall 1, c se ne 25-3n-9e	¶2	1009
MUSKOGEE COUNTY—		
Mack Drlg. Co., Richards 7, ne c se ne 33-16-15e	25	1197
Aggas Drlg. Co., McDaniel 1, se c 33-16-15e	*	1246
OKFUSKEE COUNTY—		
Burke-Greis Oil, Grayson 1, ne nw se 32-12-10e	¶12½	3053
OKMULGEE COUNTY—		
J. H. Rebold, Jones 1, se c sw sw nw 28-13-11e	12	1840
S. J. Matthews et al, Hughes 2, c ne ne 21-16-11e	¶1	593
PONTOTOC COUNTY—		
Edna Marie Oil Co., Walker 1, sw se nw 22-5n-6e	¶2	1582
POTTAWATOMIE COUNTY—		
Gypsy Oil, Horn 5, nw ne ne 23-6n-3e	735	3467
SEMINOLE COUNTY—		
Amerada Pet. Corp., Tiger 2, ne sw nw 3-8-5e	640	4186
Gypsy Oil Co., Tiger 2, ne sw nw 3-8-5e	80	3942
STEPHENS COUNTY—		
Gilbert et al, Green 1, se sw ne 2-2s-8w	115	1373

NORTH LOUISIANA

Company, Well and Location—	Initial Production Bbls	Depth
OUACHITA PARISH (Monroe)—		
J. J. Potts, Agt., Robertson-Reed 1, 11-18-4e	¶2	2240
SABINE PARISH (Zwolle)—		
Crescent Drilling Co., Byrd 3, 12-7-11	*	2515

For Tabulation and Comparison See Market Section

LOUISIANA GULF COAST

Company, Well and Location—	Initial Production Bbls	Depth
CHACAHOULA DOME—		
States Prod. Co., Dibert-Starck-Brown C	*	1405
JEFFERSON LAKE DOME—		
Jefferson Lake Oil Co., Lake Pe'gneur 28	*	912
LAKE GRANDE ECAILLE—		
Humble O&R Co., Cockrell-Moran 7	200	1174
PORT BARRE—		
Gulf Ref. Co., Wilson-Cochran 1	800	3195

ARKANSAS PERMITS

ST. FRANCIS COUNTY—Field & Jones, F. M. White 1, 1908 ft s and 170 ft e nwc 1-4n-2e.

TEXAS GULF COAST

Company, Well and Location—	Initial Production Bbls	Depth
BARBERS HILL—		
McAlbert Oil Co., J. F. Wilburn 3 (wo)	150	5220
Rio Bravo Oil Co., A. N. Fisher 2 (wo)	*	3806
DAMON MOUND—		
Layne-Texas Co., Wisdom 6 (wo)	*	3610
ESPERSON DOME—		
Cranfill Reynolds, Davis 4 (wo)	380	4125
FANETTE DOME—		
Texas Gulf Sulphur Co., Thomas 2	*	1150
Thomas 4	*	1380
FAYETTE COUNTY—		
Humble O&R Co., L. P. Lester A-1, Schulenberg Dist.	*	1305
HARRIS COUNTY—		
H. H. Givens et al, Lobit 1, Addicks Dist.	*	3364
HIGH ISLAND—		
Yount Lee Oil Co., Cade 25 (wo)	425	5545
HUMBLE FIELD—		
E. M. Wilson Oil Co., W. & P. Blk. 25, Gulf Fee 8	60	1456
MARKHAM—		
L. P. Smith et al, Hudson 1	*	3700
John Deering, Myers 1	*	4790
MOSS BLUFF—		
Texas Gulf Sulphur Co., Sargent 3	*	825

CENTRAL WEST TEXAS

Company, Well and Location—	Initial Production Bbls	Depth
BROWN COUNTY—		
S. C. Herring et al, Fry-Burnett 1	*	1510
F. A. Lane & Anderson-Drewry Corp., J. A. Baker 1	¶2	1513
The Texas Co., Lowe 87	*	1368
CALLAHAN COUNTY—		
Guffy & Perry, O. E. Bradford 2	25	398
Perry et al, Berry 1	*	440
COLEMAN COUNTY—		
Graves & Shield, Aldridge 1	*	2140
COMANCHE COUNTY—		
J. F. Carter et al, J. S. Strickland 1	*	1545
EASTLAND COUNTY—		
The Texas Co. et al, Stamps 1	20	3505
PALO PINTO COUNTY—		
Gibson et al, Witskey 1	¶2¾	2993
Gordon & Gholson, M. L. Askew 1	¶7¾	3132
Hoffman & Page Co., L. B. Strawn 1	¶¾	3045
King & Grounds, W. Gibson 1	¶3½	3043
Montgomery et al, C. Crocker 1	¶¼	3532
Palo Pinto Gas Corp., Smith 1	¶15¾	2990
Strawn Dev. Co., W. R. Baker 1	¶2¼	2986
SHACKELFORD COUNTY—		
Albany Oil Co., E. A. Jeter 1	25	899
J. A. Bearman et al, C. Flippen 1	*	1164
J. A. Butler et al, S. R. Butler 1	5	698
A. B. Bissey et al, M. Huber 1	*	700
Cross & Caskin, W. G. Webb 2	*	586
Union Oil & Mining Co., L. H. Hill 1	*	810
STEPHENS COUNTY—		
Lone Star Gas Co., T. Sylvanus 1	*	4055

CENTRAL EAST TEXAS

Company, Well and Location—	Initial Production Bbls	Depth
JOINER AREA—		
Arrow O&G Co., Will Rollins (77-ac) 3	12,000	3629
Geo. DeMonstrand et al, Pinkston 1	9600	3622
Droppleman Dev. Co., M. C. DeGuerin 1	9000	3694
Gulf Prod. Co., E. E. Thrash (83.6-ac) 6	10,000	3754
Humble O&R Co., V. Turner (146-ac) 2	9500	3740
J. E. Wheelis (184-ac) 9	9000	3766
H. L. Hunt et al, R. W. Fair (55-ac) 2-D	3000	3678
Kirby Pet. Co., R. P. Grambline (27-ac) 2-A	11,000	3760
W. H. McMurray et al, A. D. Blackwell (22-ac) 2	10,000	3672
Mid-Kansas O&G Co., T. O. Warren (60-ac) 2	7200	3655
Peery-Woody & C. W. Boller, A. Thrash (30-ac) 4	1500	3682
W. L. Sessions et al, J. Attaway 1	7000	3813
Spider Oil Co., Flory-Neal 1	4500	3836
Standard Pipe & Supply Co., W. P. Brett (48-ac) 3	6000	3735
Stanolind O&G Co.-Pure Oil Co., R. A. Moores (200-ac) 2	6500	3610
Tulsa Oil Co., O'Quinn (27-ac) 2	11,000	3796
Graddy H. Vaughn et al, W. O. Alford (90-ac) 4	8000	3825
Williford et al, S. S. Cook 1	8000	3763
KILGORE AREA—		
Devonian Oil Co.-Gulf Prod. Co., R. A. Motley (423-ac) 9	5500	3702
Gulf Prod. Co., A. Spear (82-ac) 14	9000	3572
Humble O&R Co., W. P. Moore (18-ac) 1-C	8800	3712
Henry Sexton (168-ac) 3-B	8500	3684
C. C. Julian Oil & Roy. Co., (J. W. Harreld, Rec.), England (32-ac) 2	8300	3580
Lewis Prod. Co.-Selby O&G Co., C. B. Pegues (40-ac) 4	11,000	3690
Magnolia Pet. Co., John Radford (252-ac) 3	9500	3608
J. C. Means, Jr. & Simmons (was R. E. Smith), W. P. Luse-Walker (48½-ac) 2	10,000	3557
K. E. Merren & Mays, S. Dansby (15-ac) 2	7000	3696
Prairie O&G Co., A. A. Lockhart (87-ac) 3	9600	3612
Ruston Drlg. Co.-W. A. Jones, R. Lacy (21.3-ac) 2	8000	3560
N. G. Sampson et al, Brock 1	7500	3656
Shell Pet. Corp., W. P. Moore 9	9000	3740
Rosa Russell (126-ac) 9	10,500	3653
Steen Drlg. Co., Inc., W. D. Lacy-Shell (163-ac) 4	9000	3630
Tidal Oil Co., M. R. Terrell (48.89 ac) 4	4000	3685
Dr. F. L. Thomson, et al, E. Hillburn 2	11,000	3640
Wells & Gann Drlg. Co., Hawkins 1	8500	3661
Welch & Sandler et al, R. W. Barnett-Tidal (100-ac) 1	5000	3743
LONGVIEW AREA—		
Arkansas Fuel Oil Co., Bonnie Calvin (65-ac) 2	11,000	3595
G. A. Castleberry (52-ac) 4	10,000	3618
S. G. Smith (60-ac) 3-A	13,000	3545
H. Stephens (57-ac) 4	10,500	3594
Barnsdall Oil Co.-Sun Oil Co., G. W. Bingham 6	14,500	3565
Conservative Oil Co., B. Victory (100-ac) 1	9800	3696
Cox & Jake Hamon, Jr., L. A. Rodden (110-ac) 6	9600	3597

Company, Well and Location—	Initial Production Bbls	Depth
East Texas Ref. Co. et al, T. Christian (9-ac) 1	12,500	3644
R. R. Collins (53-ac) 3	10,000	3670
W. J. Hineman (52-ac) 3	15,000	3630
Empire Gas & Fuel Co., L. A. Jeter (121-ac) 4	12,000	3594
Fain-McGaha Oil Corp., W. A. Baukn ght (50-ac) 3	9500	3624
F-H-E Oil Co., J. M. Christian (7½-ac) 1	10,000	3661
M. Christian (61-ac) 4	9500	3650
Gulf Prod. Co., J. C. Judge (518-ac) 5	8500	3548
Harry Hanbury et al, Foshee 1	7000	3687
Humble O&R Co., D. Johnston (62½-ac) 6-A	9500	3639
Houston Oil Co., E. W. Clements (50-ac) 3	9600	3588
Jackson & Bradstreet, Victory 1	12,000	3629
Kewanee O&G Co., G. E. Adams (33-ac) 4	9000	3612
W. H. Lampton et al, School Lot 2	10,000	3635
Lee & Phillips, E. M. Woods (4-ac) 2	9000	3652
Magnolia Pet. Co., Hobart Keys (64-ac) 4	10,500	3538
Bobby Manziel et al, C. H. Moore (2-ac) 1, Blk 53	12,000	3608
Meade Bros. (was Rogers et al), Walker (28-ac) 2	1000	3640
Navarro Oil Co., T. B. Harris (80-ac) 3	7500	3537
E. L. Walker (40-ac) 4	8000	3605
Shasta Oil Co., T. D. Campbell (56-ac) 2-A	9500	3605
E. G. Richey (24-ac) 2-B	10,500	3577
Shell Pet. Corp., A. N. & V. King (160-ac) 3	10,000	3670
G. W. Richey (61-ac) 7	13,000	3577
C. C. Slaton (100-ac) 5	10,000	3652
T. B. Stinchcomb (94-ac) 2	9400	3524
Sigler-Lesh & McCall, M. Young (50-ac) 3	11,000	3565
Stanolind O&G Co.-Simms Oil Co., O. J. Albright (90-ac) 3	9100	3632
Stanolind-Simms-Continental Oil Co., Flewellen 3-B	7000	3659
Sun Oil Co., John Hargraves (200-ac) 3	3000	3689
A. J. Watkins (55-ac) 2	5000	3702
Tidal Oil Co., Arch Davis (130-ac) 2	15,000	3585
W. E. Jones (80-ac) 4	12,000	3667
J. A. Woods et al, J. S. Sanders (45-ac) 3	10,000	3657
Yount-Lee Oil Co., Denson 2-B	8000	3656
M. McKinley (22¾-ac) 2	11,000	3568
VAN FIELD—		
Pure Oil Co., V. T. Davis 1	*	7501
Mary P. Neills (100-ac) 5	5500	2948

WEST TEXAS

Company, Well and Location—	Initial Production Bbls	Depth
LOVING COUNTY—		
Columbia O&G Co. (Rush) Jim Wheat 1	*	4442
WARD COUNTY—		
Sid Richardson-Kelsey & Magnolia Pet. Co., O'Brien 6	80	2765

NORTH TEXAS

Company, Well and Location—	Initial Production Bbls	Depth
ARCHER COUNTY—		
Petroleum Prod. Co. et al, Richardson 1	55	1137
United Producers Co., Logan 1	12	1215
WICHITA COUNTY—		
R. R. Clark et al, Ward & Todd 2	*	890
Burns & Long, Heiserman 8-C	2	1740
R. P. Dorian et al, Musgrave 1	*	603
Madison O&G Co., Burnett 21	*	980
Mogren & Anderson, E. E. Goetze 25	75	909
E. E. Goetze 26	215	904
WILBARGER COUNTY—		
Waggoner Ref. Co., Waggoner 14-E	40	2483
Waggoner 16-J	10	1885
YOUNG COUNTY—		
Brazelton & Price, White 1	*	802
Cooper & Mitchell, Dunagan 3	30	944
N. D. Goldsmith et al, Wilson 1	65	938
W. H. Hamon et al, Jeffery 1	*	908
United Producers Co., Larimore 5	50	705
R. J. Watson et al, Watson 10	85	687
C. C. Williams et al, Leberman 1	*	500
D. L. Wolf et al, Wolf 2	50	894
Wootten & Reed, Robinson 1-A	25	702

TEXAS PANHANDLE

Company, Well and Location—	Initial Production Bbls	Depth
WHEELER COUNTY—		
Harvey Pet. Co., J. M. Porter 1	*	3075

EASTERN STATES

INDIANA

Company, Well and Location—	Initial Production Bbls	Depth
FLOYD COUNTY—		
Brooks J. Johnston, Sharp 1	*	....
GIBSON COUNTY—		
Gib Van Oil Co., Kaskins 3	105	....
KNOX COUNTY—		
James H. Gardner, Union Investment Co. 1	*	....
PERRY COUNTY—		
H. C. Darby & Co., Cummings 1	*	....
PIKE COUNTY—		
Harry N. Bell, Craig Hrs. 3	¶1	1117
GIBSON COUNTY—		
United Oil Corp. & Co., Fields 1	*	....
PIKE COUNTY—		
P. C. Andrews, Loveless 10	50	1351
SULLIVAN COUNTY—		
Fred Bays, Marts 2	*	557
Pierson & Co., Payne 1	¶¼	258

ILLINOIS

Company, Well and Location—	Initial Production Bbls	Depth
CRAWFORD COUNTY—		
W. C. McBride, Inc., Wesner 1	10	951
ST. CLAIR COUNTY—		
Collins & Co., Waelte Hrs. 1	*	1224

KENTUCKY

Company, Well and Location—	Initial Production Bbls	Depth
HANCOCK COUNTY—		
Sands Petroleum, Inc., Burke 2	*	....
HART COUNTY—		
Mud Branch Oil & Gas Co., Bonneville 1	¶¼	....
MUHLENBERG COUNTY—		
The Ohio Oil Co., Shelton 1	*	1570
OHIO COUNTY—		
Chester Oil Co., McCarty 1	5	....

SOUTHEASTERN OHIO

Company, Well and Location—	Initial Production Bbls	Depth
NOBLE COUNTY—		
B. C. Robinson & Co., Springer 5	5	1050

CENTRAL OHIO

Company, Well and Location—	Initial Production Bbls	Depth
ATHENS COUNTY—		
Fred Gunthal & Co., Swartz 1	¶¼	1225
Standard Natural Gas Co., Bowden 8	¶¼	1150
GUERNSEY COUNTY—		
W. C. Urban & Co., Guernsey Valley Fair Grounds 3	¶¼	1091
LICKING COUNTY—		
Wehrle Gas Co., Hobart Hrs. 4	*	2275
MUSKINGUM COUNTY—		
Palmer & Geisinger, Drake 1	¶½	4086
Ohio Fuel Gas Co., Gibson Hrs. 1	*	4113
STARK COUNTY—		
Sisler & Co., Sisler 2	¶3½	4301
F. A. Brendall & Co., Danner 1	¶5¼	4245
Haymaker 3	¶1	4417
Zuber 1	¶3	....
TUSCARAWAS COUNTY—		
Wiser Oil Co., Holden Clay Products Co. 1	*	5015

NORTHWESTERN OHIO

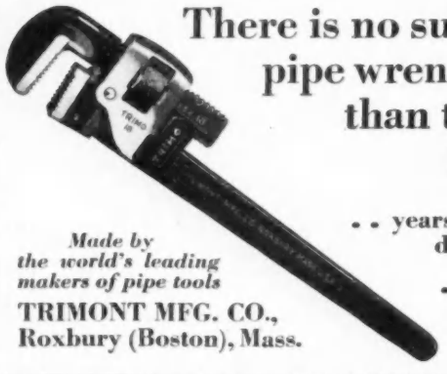
Company, Well and Location—	Initial Production Bbls	Depth
SENECA COUNTY—		
L. Curry, Weber 1	¶¼	....
M. E. Kiser, Koerper 1	¶¼	....
Arthur Geyer, Baldwin 3	*	....
WYANDOT COUNTY—		
McPheron, Miller & Co., Bowman-Billman 4	1	1383
Murphy & Co., Grubel 1	4	1468

PENNSYLVANIA

Company, Well and Location—	Initial Production Bbls	Depth
TIOGA-WAYNE FIELD—		
Natural Gas Co., Learn 1	¶11¾	....
Unknown Parties, Butters 1	*	....
Unknown Parties, Gee 1	*	3848

WEST VIRGINIA

Company, Well and Location—	Initial Production Bbls	Depth
LEWIS COUNTY—		
Southern Oil Co., Butcher 5	2	1320
LINCOLN COUNTY—		
Kanawha Gas & Utilities Co., Johnson 1	¶⅓	2004
RITCHIE COUNTY—		
C. B. Lewis & Co., Lyons 1	*	1742



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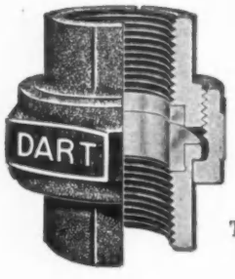

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CALIFORNIA

BUTTONWILLOW — Milham Exploration Co., Whitaker 1, 8-28-23.

COYOTE HILLS—Standard Oil Co., Emery 51, 13-3-11.

FRUITVALE—Hay Pet. Corp., No. 1, 23-29-27.

KERN RIVER—C. C. M. O. Co., No. 40, 23-28-27.

KINGS COUNTY—Magee and Stone, No. 1, 34-24-22.

LONG BEACH—R. R. Rush Oil Co., Arenz 1, 30-4-12.

SEAL BEACH—Standard Oil Co., San Gabriel 25, 3-5-12.

VENTURA AVENUE—Associated Oil Co., Lloyd 131, 27-3-23.

LOUISIANA

CAMERON PARISH — Calcasieu Oil Co., Sulphur, Unsurveyed Island 1, 24-12s-10w, 1013 ft s and 442 ft e of nw cor of section.

SABINE PARISH—Baird Co., Ltd., Shreveport, Petty 1, 11-7n-11w, 200 ft n and 200 ft w of center of se¼. B. A. Ferrell, Zwolle, Haley 1, 6-7n-12w, 330 ft s and 330 ft e of nw cor nw¼ sw¼. H. W. Perritt, Shreveport, Brown Lbr. Co. 1, 6-7n-10w, 270 ft n and 260 ft e of sw cor of se¼. H. Rush Smith, Shreveport, La. Long Leaf Lbr. Co. 2, 12-7n-11w, 330 ft n and 330 ft w se cor nw¼ sw¼. S. B. Morgan, Amended Permit, Shreveport, Guaeyheagan 1, 11-7n-11w, 230 ft n and 330 ft w se cor of sec.

ST. LANDRY PARISH — Port Barre Oil Co., Amended Location, Lake Charles, Sibille 1, 2-6s-5e, 800 ft s and 124 ft e nw cor of Sibille Co. 30 ac tr.

TERREBONNE PARISH—The Texas Co., Amended Location, Shreveport, State Lake Barre 15, 38-21s-19e, 1400 ft w and 200 ft s nw cor of sec 30-21s-20e, in Sec. 28-21s-19e.

UNION PARISH — Southern Carbon Co., Monroe, Fee 58, 17-20n-4e, 1557 ft w and 1220 ft s ne cor of sec.

KANSAS

COWLEY COUNTY—Roth, Faurot et al, Baker 1, nw ne se 22-32-4e.

GREENWOOD COUNTY — Empire O&R, Hillman 4, sw ne ne 35-23-11e. McGinnis et al, Peoples 1, n ne nw ne 33-23-11e. Harwood et al, Beal 2, sw c se 28-23-11e. McGinnis et al Beall 1, se c sw 28-23-11e.

KINGMAN COUNTY—Skelly Oil Leisman 1, c se sw 20-27-10w.

McPHERSON COUNTY—Dickey Oil Co., Decker 2 "B", sw nw se 35-19-2w. Rosespring Drlg. Co., Dielman 1, se ne sw 35-19-2w. Wolfe Creek Oil Co. et al, Krehbiel 2, nw c 35-19-2w. Olsen Drlg. et al, Johnson 1 "B," ne c se 29-19-1w.

PRATT COUNTY—McMurray et al, Hardesty 1, c sw se 28-27-11w.

SEDGWICK COUNTY—Davidson and Miller, Houston 1 (owd) nw ce se sw nw 19-27-2e. Rosenthal et al, Pinsen 1, cnl sw sw 15-25-1e.

OKLAHOMA

CREEK COUNTY—The Texas Co., Weaver 9, se c ne se 13-19-8e. Holmes Oil Co., Coney 1, ne c 2-19-9e. J. E. Wallace et al, Riverland 1, sw c 2-19-9e. McCurry et al, Reed 1, se c nw sw 28-17-11e. J. A. Allen et al, Robinson 1, se c nw 32-17-11e. Magnolia Petroleum, Williams 10, se c sw sw 3-16-7e (owd). E. Shamblin et al, Wilson 1 (owd) se c ne ne 21-15-8e. Peter Brown et al, Abraham 1, ne c nw ne 19-14-9e.

HASKELL COUNTY—Mid-Western O&G, Rabon 1, c sw sw 33-8-19e.

LINCOLN COUNTY—Soverign Oil Corp., Salacek 1, ne c se 3-12-5e.

OKLAHOMA COUNTY—American O&R, 1, c s½ se ne se 34-12-3w. Anderson-Prichard Oil Corp. et al, Wilhoit 2, sw c nw ne ne 10-11-3w. Phillips Pet. et al, Everette 2, nw c se nw se 15-11-3w. Denver P&R, Johnson 1, ne c sw nw ne 22-11-3w. Phillips Pet. Carnes 1, nw c ne 22-11-3w. Phillips Pet. et al, Garver 1, sw nw ne 22-11-3w.

OKMULGEE COUNTY—Iron Mountain Oil Co., Aultman 12, cwl se ne 24-13-14e.

OSAGE COUNTY—Pueblo Pet. 3, ne c se nw nw 14-21-8e.

PAWNEE COUNTY—A. J. Bookout, Pierce 1, ne c se sw 20-20-10e.

SEMINOLE COUNTY—Empire O&R, Fish "B" 2, ne sw se 19-7-8e. The Texas Co., Eliza 2, se nw se, 19-7-8e.

For Tabulation and Comparison
See Market Section

TEXAS

BEXAR COUNTY—W. K. Oil & Gas Co., San Antonio, Strunk, 139, 3, J. Montes sur, 300 ft e of No. 2. Gatlin Oil Co., San Antonio, I. A. Beck, 278, 11, J. Montez sur, 701 ft from se and 156 ft from sw line.

CARSON COUNTY—Texoma Natural Gas Co., Amarillo, S. B. Burnett, 800 1S, S 94, B 5, I&GN sur, 1334 ft from e and 1337 ft from s li sec.

CALDWELL COUNTY—United North & South Dev. Co., San Antonio, R. S. Shanklin 115, 1, J. Henry sur, 155 ft from s and e lines.

COOKE COUNTY—W. R. Lemons, Gainesville, W. L. Griffin, 80, 1, B 62, CCSL sur, 150 ft from s and w lines.

COLEMAN COUNTY—Anzac Oil Corp., Coleman, G. W. Jennings, 1, No. 751 J. Martinez sur.

CHAMBERS COUNTY—Texas Gulf Prod. Co., Houston, A. E. Barber, A, 73, 7, H. Griffith sur, 225 ft from nw and 712 ft from sw line. Mills Bennett Prod. Co., Houston, Gulf, B, 114, 1, Wm. Bloodgood sur, 500 ft from sw and 50 ft from se line.

CHEROKEE COUNTY—Clopton & Hawkins, Dallas, A. P. Pace, 40, 1, B 13, Wm. Dykes sur, 330 ft from e and 288 ft from s line.

DUVAL COUNTY—Humble Oil & Refg. Co., Houston, P. E. White, 640, 3, Sec. 58 sur, 1650 ft from s and w lines. J. S. Suttle, San Antonio, O. Bennett, 40, 1, S 44, J. Poitevent sur, 150 ft from n and e lines. S. R. & C. Oil Corp., San Antonio, Duval Ranch, 645, 7, S 296, GC&SF sur, 300 ft n of No. 6. O. W. Killam, Laredo, W. R. Peterson, 160, 1, S 1, SA &MG sur, 450 ft from e li se¼. Thomas & Tarver, San Antonio, Bishop, 160, 6, Sec. 135 sur, 2357 ft from w and 330 ft from n line.

FORT BEND COUNTY—Gulf Prod. Co., Houston, J. M. Moore, 32, Jas. Frazier sur, 5042 ft from n and 275 ft from w line; L. W. Luscher, 100, 19, T. Hobermaker sur, 1650 ft form n and 550 ft from w line.

GREGG COUNTY—Bay Oil Corp., Longview, W. M. Wheeler, 49, 2, D. Ferguson sur, 400 ft from n and 330 ft from e line. Hawkeye Pet. Corp., Longview, J. C. McKinley, 10, 2, D. Sanchez sur, 317 ft from e and 330 ft from s line. Shano Oil Co., Longview, Mrs. J. T. Hopkins, 31, 2, Wm. Castleberry sur, 330 ft from n and 215 ft from w line. Pilot Oil Co., Dallas, Mrs. M. Magrill, 10, 2, D. Sanchez sur, 330 ft from w and 181 ft from s line. Welch & Fandler, Kilgore, R. W. Barnett, 100, 1, T. Johnson sur, 150 ft from e and 330 ft from s line. F. W. O'Brien, Dallas, W. Daniels, 20, 2A, M. Van Winkle sur, 150 ft from w and 200 ft from s line. Lechner & Hubbard, Dallas, J. M. Tuttle, 25, 3, W. H. Castleberry sur, 215 ft from w and 330 ft from s line. C. K. Dawson, Tyler, L. P. Griffin, 4½, 2, M. Van Winkle sur, 140 ft from e and 73 ft from s line; 3, 100 ft from n and 150 ft from w line. Atlantic Oil Prod. Co., Dallas, J. M. Tuttle, 58, 3, Wm. Castleberry sur, 275 ft from n and 915 ft from e line; 4, 660 ft sw of No. 3. Arkansas Fuel Oil Co., Shreveport, La., J. C. McKinley, A, 96, 4, Wm. Robinson sur, 330 ft from w and 400 ft from s line; J. W. Harrison, B, 29, 3, G. W. Hooper sur, 330 ft from s and w lines. Gulf Prod. Co., Houston, J. C. Judge, 518, 7, F. W. Johnson sur, 660 ft e of No. 6; A. Muckelroy, 152, 6, J. S. Caruthers sur, 330 ft from w and 1567 ft from s line; G. W. Culver, 244, 6, Jno. Wilkinson sur, 138 ft from e and 104 ft from s line. Barnsdall Oil Co., Tulsa, Okla., M. Adams, 102, 8, G. W. Hooper sur, 1344 ft from w and 330 ft from s line. F. H. E. Oil Co., Fort Worth, B. C. Christian, 87, 7, G. W. Hooper sur, 330 ft from n and e lines. Prairie Oil & Gas Co., Ranger, H. J. Thomas, 65, 2, J. Norris sur, 700 ft s of No. 1. Magnolia Pet. Co., Dallas, M. Dyer, 39, 4, H. Hathaway sur, 330 ft from n and e lines; C. Davis, 47, 7, H. Hathaway sur, 606 ft nw of No. 5. Darby Pet. Corp., Tulsa, Okla., W. H. Richey, 4, H. H. Edwards sur, 250 ft from e and 330 ft from s line. Cranfill & Reynolds, Houston, G. Anderson, 8, 2, P. McAnnelly sur, 300 ft e of center of w line. Sinclair Oil & Gas Co., Fort Worth, J. E. Lawther, 317, 3, M. Garrett sur, 330 ft from n and 1994 ft from w line; S. G. Andrews, 200, 5, J. G. Walker sur, 330 ft from n and w lines. Tidal Oil Co., Fort Worth, A. Davis, 130, 4, Hart sur, 330 ft from e and 1140 ft from s line. Shell Pet. Corp., Dallas, B. F. Laird, 211, 2, J. Wilkinson sur, 330 ft from w and 250 ft from s line. Simms Oil Co., Dallas, J. J. Flewellen, 374, B4, M. Mann sur, 1555 ft from w and 330 ft from s line. Texas Co., Shreveport, La., J. M. Dickson, 88, 5, Wm. McCurry sur, 1070 ft from n and 330 ft from w line. Stanolind Oil & Gas Co., Longview, O. J. Albright, 90, 4, W. H. Hart sur, 330 ft from n and w lines.

GONZALES COUNTY — A. Edmiston, San Antonio, Mrs. J. Ward, 430, 1, D. McKay sur, 300 ft from n and w lines.

GRAY COUNTY — Skelly Oil Co., Tulsa, Okla., H. Schafer, 640, 28, S 189, B 3, I&GN sur, 440 ft from s and e lines of ne¼.

HARDIN COUNTY—Rio Bravo Oil Co., Houston, Fee, 320, B129A, BBB&C sur, 200 ft e of B124A. Ada Belle Oil Co., Batson, Wm. Weiss, 6, 150, F. H. Green sur, 300 ft from e and 50 ft from s line.

HOWARD COUNTY — Otis Chalk, Big Springs, R. L. Chalk, 80, 1, S 96, Blk. 29, 330 ft from s and e lines of sec.

McLENNAN COUNTY — C. E. Groover, Waco, J. D. Barton, 160, 1, J. D. Sanchez sur, 500 ft from w and 1100 ft from s line.

NUECES COUNTY—Gulf Coast Oil Co., Houston, Perkins-Lagasse, 245, 1, H. B. Shepherd, 330 ft from n and e lines.

PALO PINTO COUNTY—Nelson Oil Synd., Mineral Wells, T. W. Finch, 810, 6, Nathaniel sur, center of blk 40; 7, sw cor of Blk 40; P. P. Pierce, 1, Jones Add., center of lot 2.

PECOS COUNTY—Corvette Oil Corp., Fort Worth, J. H. Tippett, 40, 4, S 40, B 194, CC &SF sur, 690 ft from n and 916 ft from e line.

PRESIDIO COUNTY—Presidio Pet. Co., Presidio, R. I. Bledsoe, 640, 1, S 15, B 351, GC&SF sur, 2440 ft from n and e line of sec.

RUSK COUNTY—Great Plains Oil & Gas Co., Tyler, S. Stone, 28, 3, M. J. Pru sur, 210 ft from n and 855 ft from e line. Kirby Pet. Co., Houston, J. Reddic, 96, 3, T. Grace sur, 330 ft from s and w lines. M. H. McMurray, Henderson, A. D. Blackwell, 2, 2A, M. J. Pru sur, 250 ft from w and 317 ft from s line. Malerne et al, Oklahoma City, Okla., E. B. Alford, 30, 1, A. J. Moore sur, 257 ft from w and 339 ft from s line. J. A. McIntyre, Henderson, C. N. Dickerson, 55, 1, T. J. Martin sur, 335 ft from n and 331 ft from w line. M. H. Barton, Overton, L. E. Darnell, 10, 1, H. B. Dance sur, 166 ft from e and 330 ft from s line. Weaver-Crim Oil Corp., Longview, F. Bean, 16, 1, M. Cogswell sur, 666 ft from w and 212 ft from s line. Jackson, Wise & Snedden, Tyler, C. O. Christian, 16, 3, J. S. Whiteman sur, 249 ft from n and 330 ft from w line. Golding-Murchison Oil Co., Dallas, I. L. Kin-

(Continued on page 67)

Wildcat Reports from All Sections

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CENTRAL EAST TEXAS

Company, Well and Location—	Initial Production Bbls	Depth
LAMAR COUNTY—		
Optometrists Oil Club, J. M. McFadden (25-ac) 1	*	2506
RUSK COUNTY—		
Albert W. Jones Oil Co., J. M. Grant (100-ac) 1	†	2400
Mrs. S. O. Thompson et al, C. A. Price (1535-ac) 1	*	3280
WOOD COUNTY—		
Yankee O&G Co., Davis Bros. 1	*	4200

EAST TEXAS

HARRISON COUNTY—Ryan Cons. Pet. Corp.'s J. M. Furrh 1, T. J. Copelain sur, rig. Lloyd Oil Corp.'s Timmons 1, Jno. Findley sur, 10-inch 240 ft, sd 4195 ft, lime and anhydrites. Gauchee et al's T. W. Davidson 1, Richard Starr sur, lcn.

MARION COUNTY—Baunauch Dev. Co.'s Miller 1, Henry Fulgram sur, top Saratoga 2260 ft, top PG 2480 ft, cor 2932 ft.

PANOLA COUNTY — United Gas Pub. Serv. Co.'s Cadenhead 1, B. C. Jordan sur, sp 10-inch cas 20 ft. Daisy O&G Co.'s Rucks Hrs. 1, Jno. Palmer sur, sd 3264 ft shale. Moses & Wallace's C. L. Daniels 1, Isabel Hanks sur, sd 650 ft. Hoffer et al's Cameron 1, W. A. Lagrone sur, dk. Davidson et al's Latham 1, Wm. Rich sur, 10-inch 260 ft, base chalk 2095 ft, sd 2334 ft. Nelson et al's Williams 1, Jas. Hanks sur, 12½ cas 400 ft, sd 3055 ft shale and lime. Stamps et al's Chadwick 1, Wm. Scantleberry sur, rig.

SABINE COUNTY—Rogers & Johnson's Polley 1, Jno. Horton sur, sd 250 ft.

SHELBY COUNTY—E. L. Chapman's Holt 2, Matthew Moore sur, 10-inch 103 ft, sd for reprs 3030 ft (sec hole). McRobie et al's Windham 1, Wm. Leach sur, (296-ac tract), sd while trying pull parted cas, td 3393 ft. Maulding et al's Frost Lbr. Ind. 1, A. B. Fountain sur, sd 3246 ft. H. H. Gracey's J. A. Morrison 1, Wm. English sur, sd 2600 ft. C. H. Tautenhahn's J. C. Bogard 1, Thos. Baker sur, sd 20 ft, partly rigged up. Ridgeway et al's Polley 1, Domingo Gonzales sur, 10-inch 112 ft, sd wo cas 822 ft. K. H. Francis' Jno. Mims 1, Mary Smith sur, fsh ds, td 3382 ft. Oil News Pub. Co.'s (Simpson & Lewis), Pickering 1, G. H. Patterson sur, (361-ac tract), cored marl 1495-98 ft, dr to 1508 ft, flowed sw show oil, ran 2-inch tub with pckr, swabbing oil and some sw, td 1508 ft. Ray & Dunbar's Hayden 1, D. F. T. Yordt sur, (153 ac tract) rig. Fuller & O'Brien Bros.' Frost Johnson 1, Aaron Castleberry sur, lcn. Western World Pub. Co.'s Foster & Billingsley 1, J. Bowlin sur, (old well dr deeper, started by Wm. A. Stephens), top chalk 2000 ft, dr 2220 ft chalk.

TEXAS GULF COAST

AUSTIN COUNTY—C. O. Farrington et al's Jackson 1, Brookshire prospect, dr water well. Great Southern Drilling Co.'s F. Schovajsa 1, 3 mi s Bleiberville, dr gbo 1200 ft, rep slight show of gas at 1100 ft. J. P. James et al's Scholeckte 1, near Kenny, installing heavy rig to dep old Parmesan & Cafferkey test, old td 1502 ft in gbo.

BRAZORIA COUNTY — The Texas Co.'s Belcher 2, Manvel, making up tub, td 5588 in oil sn; Cave 2, Damon Mound, core 3435-37 ft, no show. W. D. Southerland et al's Chapman 1, Lockridge, taken over by Deering & C. S. Thomas, td 1514 ft.

BURLESON COUNTY—M. O. T. Oil Co.'s Rogers 1, sd at 2050 ft account high water.

CHAMBERS COUNTY — Pure Oil Co.'s Mayes 14, Lost Lake, tested 11 fourbles oil and 3 jts mud and su with very little gas at 2800-13 ft.

FORT BEND COUNTY—Naylor & De Costa's Naylor 1, Chrisman sur, set surf cas and sd acct high water. Cullen & West & Gulf Prod. Co.'s George 3, Rabb Ridge, dr 4618 ft shale; H. P. Lockwood 3, ru. Gulf Prod. Co.'s T. R. Booth 1, Rabb Ridge, dr shale 1647 ft.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet of gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in.—inches; lcn—locat on; m—milling; n s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp — spudding; sr — straight reaming, std — standardizing; sw — salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

Jas. T. O'Hara's T. A. Brown 1, Pilant Lake, td 1025 ft, hauling mud.

GALVESTON COUNTY—Yount Lee Oil Co.'s Cade 26, High Island, set 10-inch cas 1320 ft, dr 2937 ft; Cade 27, ur; Broussard & Orme 1, High Island, dr 3621 ft.

GRIMES COUNTY—J. C. Barnett et al's G. W. Dodd 1, w of Iola, sd acct high water at 800 ft. Rianjo Oil Co.'s Cuthrell 2, Carlos Dome, sd at 1200 ft. Stanolind O&G Co.'s Sullivan 1, move in boiler.

HARRIS COUNTY—Rio Bravo Oil Co.'s Settegast 23, Pierce Junction, cored sndy sh shwg oil at 4144 ft.

JACKSON COUNTY—Chicago-Gulf Corp.'s Drushell 10, dr 2216 ft; Drushell 4, Edna Dist., dr 3400 ft.

JASPER COUNTY—Hext Drlg. Co.'s Flournoy 1, 4 mi se Jasper, td 3997 ft, shwg oil at 3988 ft, setting 6⅝-inch csg.

JEFFERSON COUNTY—Pittman & Elam's Broussard 1, 2 mi w Sabine, dr 2220 ft. Fort Worth Dev. Co.'s O. M. Todd 1, Cheek dome, dr 850 ft.

MATAGORDA COUNTY—United N. & S. Dev. Co.'s Stoddard 1, Buckeye Dist., fishing at 7741 ft; McDonald 1, Markham, tested 12 jts mud and oil, 20 joints oil and 20 jts mud in 2 min, td 3580 ft.

MONTGOMERY COUNTY — Heep Oil Corp.'s R. L. Cartwright 1, 1½ mi ne Strake's So. Tex. Dev. Co. 1, dr 3020 ft. Pevehouse Oil Co.'s Sealey 1, 5 mi w Conroe, dr 3637 ft.

NEWTON COUNTY—R. T. Brisco's Joe Inman 1-A, sd 1800 ft.

ORANGE COUNTY — Ala-Tex Oil Co.'s Reed 1, 2½ mi se Orange, dr 3648 ft. Crews Oil Co.'s Mansfield 1, Orange Dist., sd at 2275 ft. The Texas Co.'s Polk Kuhn Glass Co. 1, Port Neches, r at 6103 ft; Kuhn 3, dr 2675 ft gbo, li and bldrs; Polk 3, Port Neches, set 10-inch cas 1700 ft.

TRINITY COUNTY — Mound Prairie Oil Co.'s Wm. Cameron Lbr. Co. 1, E. I. Pantalon sur, dr 3612 ft shale.

NEW MEXICO

BERNALILLO — Norrins Realty's Pajarito Grant 1, 29-9n-2e, dr 1243 ft, carry 12½-in.

CHAVES—Warman Oil Trust's Evans 1, 15-14s-25e, dr 703 ft.

DE BACA—Matador Oil Co.'s Wood 1, ne 6-4n-20e, 5 3/16-in cemt at 3495 ft, sd 3500 ft to set cemt. Landowners Oil Co.'s State 1, ne 16-1s-27e, sd 4673 ft, pipe shipped.

DONA ANA—Middle Sts. O&G Co.'s Boretzi 1, 14-26-5e, rigging rotary.

GUADALUPE—N. M. Prod. & Ref. Co.'s McMillan 1, 24-5n-16e, dr 4025 ft in granite wash.

LEA—Baker Oil Co., Inc.'s sw nw 15-13s-33e, moving in.

LUNA—Angelus O&M Co.'s State 3, se 30-21-10, stand cemt, td 6171 ft.

OTERO—Ernest et al's 1, se 20-25s-7e, stand 1445 ft. Pasotero Oil Corp.'s Evans 1, sw 32-5s-30, rig.

RIO ARRIBA—Berrenger et al's Hartman 1, ne 8-29n-7w, sd 825 ft. Governador Oil Co.'s 1, 15-29n-7w, dr 2005 ft, carry 5 3/16-in.

ROOSEVELT—Peterson et al's Good 1, 32-5s-30e, rig up.

SAN JUAN—Kutz Canon O&G Co.'s Day 1, se 20-28n-10w, sd 3742 ft. Rio Grande Dev. Co. 2, 9-26-11, sd 1771 ft. Continental Oil Co.'s Rattlesnake 24, 1-29n-19w, coring 6732 ft. San Juan Leaseholds' Bowman 3, nw 30-30-15, sd 2685 ft. Williams et al's Stallings 1, sw 17-25n-15w, stand 150 ft.

SANTA FE—Jones' Owsley et al, 5-10n-9e, sd 435 ft. N. M. Securities Co., sw 6-10n-7e, sd 480 ft.

SAN MIGUEL—Starr Oil Co.'s Adams 1, ne 25-17n-16e, fsh pipe 5095 ft. Hershfield Dev. Co.'s Cabra Springs 1, ne 21-12n-22e, dr 1700 ft last report.

COLORADO

ADAMS—Hills Dome Lease Dev. Co., se 27-3s-54w, resum at 3790 ft.

ARAPAHOE—McDeb Dr. Co.'s Fitzsimons 1, ne 7-4s-66w, dr 5925 ft.

ARCHULETA—Oil City Pet. Co.'s Fitzhugh 1, sw 34-33n-1e, topped Lakota at 670 ft.

BOULDER—Julius Williams' Degge 1, 6-1n-71, dr below 1250 ft. Ahlstrand et al's Woodley 1, nw 8-3n-70w, sd 565 ft.

ELBERT—Belmont Oil Co., sw 27-3n-64w, sd 3745 ft. Progressive O&L Co.'s Pease 1, se 27-10s-66, sd 3820 ft.

EL PASO—Gulf States Oil Corp.'s Carson 2, ne 10-16-66, sd 1126 ft. Utemore Synd.'s Carson 2, ne 10-16s-66, to resume 1025 ft.

GRAND—Oil Mineral Lands, Inc.'s McElroy 1, sw 14-2-81w, sd 545 ft.

JEFFERSON—Ruby Hill O&G Co.'s Braden 1, se 34-4s-59w, dr 4185 ft.

LA PLATA—McGarr Pet. Co.'s Pinon Mesa 1, ne 34-33-12, rig up. J. W. Irwin & Co.'s Doescher 1, nw 29-33-13w, sd 3175 ft. Phipps et al, sw 9-33-13, td 520 ft.

LARIMER—Mayer et al's Reed 1, nw 28-4n-60, ur 6⅝-in, td 3100 ft. Natural Gas & Oil Co.'s Meade 1, se 17-4n-69w, sd 1900 ft. Colo. Prod., Inc.'s Foster-Motz 1, se se 17-4-60, cemt cave, sd 1435 ft. Colo. Prod., Inc.'s Hogsett 1, se ne 20-4-60, sp and sd. C. Leonard Smith's State 1, 36-12n-70, prep to res, td 760 ft. Poudre River Oil Co., se nw 34-8n-69w, sd for 8¼-in, td 1996 ft. Consolidated Drlg. Co.'s Maxwell 1-A, ne 25-8n-70, to res at 285 ft. Cutler et al, se 4-4n-70, sp 150 ft.

LINCOLN—Eastern Colo. Oil Corp.'s State 1, 36-14n-57w, co 60 ft off bottom at 3449 ft.

MOFFAT—Ohio Oil Co.'s Bogenschultz 1, se 9-6n-91, ready to test gas at 2781 ft.

MORGAN—Badger Creek O&G Co., sw 2-2-57, stand 1340 ft.

PARK—So. Park O&G Co.'s Milligan 1, se 13-8s-76w, co 2680 ft. South Park O&G Co.'s Esche 1, ne 5-9s-76w, sd 2442 ft.

RIO BLANCO—California Co.'s Raven 1, se 20-2n-102, dr 3601 ft.

ROUTT—Mid-Colo. Pet. Corp.'s Omholt 1, se 29-4n-97, sd 1700 ft.

WASHINGTON—Middlemist Oil Co.'s Middlemist 1, se 14-4-56, sd 1503 ft.

WELD—Conoco's Gadbois 1, sw 24-6n-61w, shot, td 6701 ft, show 27 bbls on 5-day swab test. Reiter-Foster Oil Co.'s Johnson-Juhl 1, se 14-6n-61, mis special cemt to plug off Dakota to test sand at 6260-70 ft.

WYOMING

CARBON—Midwest Refining Co.'s U. P. 27, 27-11-81, sd for winter. Prairie O&G Co.'s Bunker Hill 1, 29-27-87, sd for winter, td 6147 ft.

CONVERSE—John Ackard, se 24-33-72, sd 1820 ft.

CROOK—Northwestern Oil & Natural Gas Co., 6-54-60, sd 1585 ft for winter.

FREMONT—Wiebolt et al, 35-33-99, wait for 5 3/16-in at 2620 ft. Ward O&G Co., 28-34-

90, new lcn. Yellowstone Oil Co., sw 14-39-94, stand 1000 ft last report. Ward O&G Co., 28-34-90, moving in rotary.

LINCOLN—Wyo. Prod. Co., 14-24-113, td 1700 ft.

NATRONA—Mutual Oil Synd.'s Midway 2, sw se 14-35-79, sp. Summit Oil Co., 21-33-80, sd 1387 ft. Wyo. Imperial Oil Co., sw 13-33-79, rig up.

NIOBRARA—Fall River Roy. & Internat'l O&R Co.'s Joint Globe 1, 2-39-61, sd 600 ft.

SHERIDAN—R&D Oil Co., se 21-57-87, sd 1300 ft.

WASHAKIE—Bales Oil Trust, nw 31-48-80, sd for winter at 1100 ft.

WESTON—LeFaivre Oil Synd., se 29-45n-68w, stand 1250 ft. Julius Peters et al's Weitzell 1, se nw 30-46-64, resum 3400 ft to dr 100 ft deeper. Stockade Anticline Synd., 32-45-60, sd. Gose Oil Synd.'s Gose 1, 28-47-65, sd 5050 ft.

MONTANA

CARBON—Corbett Roy. Co., sw se 1-6s-23e, show oil at 1100 ft. Jack Creek O&G Co., 1, se 15-7s-23e, td 1325 ft. Ohio Oil Co., Kutchinski 1, 15-7s-21e, dr 3280 ft.

CARTER—E. T. Moorehead, sw 36-4s-57w, sd.

CASCADE—Buscher & Cassady, Johnson 1, se 19-22-3e, sd 1387 ft, hfw. Charles Merz et al, Sheffels 1, nw 4-21-4e, to run 6-inch to 905 ft.

FALLON—H. W. MacDonald's 1, sw 28-8n-60e, 8¼-inch cem 1682 ft, co.

FERGUS—Melton Corp., 1, sw 24-21n-17e, dr 3100 ft last report. Probably sd. Landheim-Romunstad 2, ne 3-17n-20e, set 6⅝-in at 2116 ft, sd 2600 ft.

GALLATIN—Mont. Gas & Pete Corp., Adams 1, 35-1n-2e, stand 527 ft. Gallatin Valley Oil Co., Haglund 1, sw 13-34-6w, sd 2539 ft.

GLACIER—Fulton Blackfeet Oil Co., ne 28-36-12w, cem 2950 ft.

GOLDEN VALLEY — Golden Valley Oil Co., 28-6n-22, dr 2865 ft last report.

LIBERTY—Northland O&G Corp., Yurman 1, sw 32-33-5e, dr 3820 ft. California Co., Ross 1, ne 3-33-6e, dr 2735 ft.

MUSSELSHELL — Minn-Flatwillow Pete Co., 1, sw 7-11-31e, to res at 2556 ft.

SWEETGRASS—Shoshone Cons., nw 23-2n-15e, 5500 ft, standing.

TETON—California Co.'s Sullivan 1, nw 34-28-7s, sd for winter, td 2810 ft. Earl Oil Corp.'s Gad 1, se 22-22-8w, sd 2850 ft to re. Mar. 1.

TOOLE—Oregon Synd., se 20-36-2e, dr 2320 ft. Western Nat'l Gas Co., nw ne 26-37-4e, to be dd from 1813 ft in spring.

YELLOWSTONE—Pan-American Oil Synd., 23-2s-24e, sd 2360 ft. Peter Antonioli, ne ne 21-2n-25e, dr 2450 ft, nearing Dakota.

KANSAS

SUMNER COUNTY — Trees Oil Co. & Shell, Springate 1, ne se sw, 6-34-2e, dr by 10-inch, td 2285 ft.

KINGMAN COUNTY — Panhandle Drlg. Co., Wetherall 1, c se nw sw, 20-28-10w, sd 890 ft.

PRATT COUNTY—Ninnescah O&G, Hardesty 1, sw se se, 28-27-11w, rog.

HARVEY COUNTY—Liggett et al, Davis 1, c sw se ne, 7-24-1e, sd 2500 ft.

GREENWOOD COUNTY—Ward McGinnis, Burk 1, sw ne, 10-24-8e, td 2458 ft, D&A.

FINNEY COUNTY — National Ref. Co., Wells 1, sw c, 12-23-30w, td 3965 ft, ur 8-in.

HARVEY COUNTY—Joe Liggett, Voshell 1, ne sw, 3-23-3w, lcn.

RENO COUNTY—Jarvis & Wright, Rainbow 1, nw nw se, 33-22-7w, rig.

RICE COUNTY—Joe Liggett et al, Thodel 1, c nw nw 11-21-7w, spd and sd.

McPHERSON COUNTY—Twin Drlg. Co., et al, Farver 1, sw se, 16-20-1w, Viola 3438 ft, dr 3458 ft hfw.

BARTON COUNTY—Skelton Oil, Ott 1, c se se, 16-19-14w, sd 3375 ft, csg trbl.

RICE COUNTY—Gypsy, Steckle 1, c ne nw, 31-19-10w, top sil. 3299 ft, td 3325 ft, hfo.

McPHERSON COUNTY — Deitrick et al, Sinclair 1, se sw, 25-19-1w, lcn.

RUSH COUNTY—Shelton-Schleagel, Brock-Hartman 1, sw se nw, 4-18-12w, spd and sd.

BARTON COUNTY — Morgan & Flynn, Haas 1, ne sw, 30-18-15w, lcn.

MORRIS COUNTY—Urschell et al, Bersuch 1, c nw se nw, 10-17-7e, sd 915 ft.

ELLSWORTH COUNTY—Raymond Gear et al, Sauberli 1, c sw se, 29-16-9w, spd and sd.

MORRIS COUNTY—Kastle et al, Furney 1, ne se, 16-16-8e, spd and sd. Hankenson et al, Cessnum 1, sw se, 24-17-9e, sd 2625 ft.

RUSSELL COUNTY—Tom Palmer et al's Pasek 1, c se, 3-14-11w, 6-inch 3317 ft, td 3358 ft, hfw.

OSAGE COUNTY—Riggs-Smith, Wood 1, c se nw, 31-14-15e, td 2200 ft.

RUSSELL COUNTY—James Brennan, Walz 1, cwl e½ nw 29-13-11w, ru. Twin Mounds Oil, Weis 1, c w½ ne nw, 30-13-4w (owd), td 2710 ft, sd.

DICKINSON COUNTY—Severs et al, Livingood 1, ne sw, 13-13-2e, sd 4752 ft.

SHERIDAN COUNTY — Flo et al, Shoemaker 1, se sw sw, 27-27-26w, 6-inch 4143 ft, dr 4150 ft.

WASHINGTON COUNTY — Sincox, Penwell 1, nw se nw, 16-3-3e, sd 1720 ft.

RAWLINS COUNTY—Danciger et al, Unknown 1, sw c, 3-2-35w, 6-inch 3875 ft, hfw 3925 ft, sd.

OKLAHOMA

ALFALFA COUNTY—T 27n, R 11w, Sec. 12, Smith Bros., Forbes 1, ne c se nw nw, sd 1420 ft.

KAY COUNTY—T 27n, R 2e, Sec. 9, Mummer et al, Sornick 1, nw c se, sd 3693 ft.

GRANT COUNTY—T 25n, R 4w, Sec. 22, Cowden, Vollmer 2, ne c se ne sw, sd 5640 ft.

ALFALFA COUNTY—T 24n, R 11w, Sec. 14, J. V. Bailey, Acre 1, c sw ne, sd 5502 ft.

GARFIELD COUNTY—T 24n, R 6w, Sec. 9, Pulse & Beamer, White 1, se c nw, sd 5850 ft.

BLAINE COUNTY—T 19n, R 10w, Sec. 13, Washoma, Phillips 1, c nw sw, sd 5120 ft.

LOGAN COUNTY—T 18n, R 3w, Sec. 33, Healey et al, Quier 1, se c sw, sd 3970 ft.

KAY COUNTY—T 28n, R 3e, Sec. 24, Atkinson et al, Hays 1, se c ne, dr 3122 ft.

PAWNEE COUNTY—T 20n, R 5e, Sec. 6, W. A. Rookstool, Berry 1, nw c ne sw, sd 1951 ft.

LINCOLN COUNTY—T 17n, R 5e, Sec. 36, Mote et al, School land 1, nw c, ur 12-inch 1325 ft. T 14n, R 3e, Sec. 2, Hilton Phillips et al, Phillips 1, sw c nw, dr 2850 ft.

CREEK COUNTY—T 14n, R 7e, Sec. 18, Cal Cul, Holleyman 1, se ne se, fsh 705 ft.

LINCOLN COUNTY—T 13n, R 6e, Sec. 8, Atlantic, Beebee 1, ne sw sw, dr 3935 ft.

PITTSBURG COUNTY—T 7n, R 14e, Sec. 34, Tape Oil Co., Fulsom 1, se c, dr 1790 ft.

LATIMER COUNTY—T 6n, R 19e, Sec. 16, P. English, Weaver 1, c nw se, sd 1542 ft.

PITTSBURGH COUNTY — T 5n, R 14e, Sec. 9, W. B. Hailey, Coal land 1, ne c sw, sd 1050 ft.

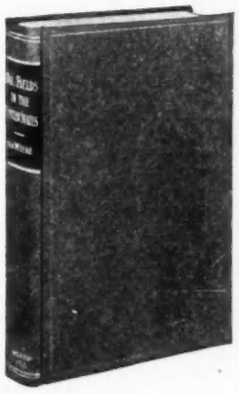
SEMINOLE COUNTY—T 10n, R 6e, Sec. 19, Bunte et al, Bruner 1, se c nw, rig.

ROGER MILLS COUNTY—T 12n, R 24w, Sec. 23, Ute Oil, Williams 1, c sw, sd 5150 ft. T 11n, R 26w, Sec. 4, J. J. Rook & Palmer, Davis 1, c nw ne (owd) dr 3420 ft.

CANADIAN COUNTY—T 10n, R 6w, Sec. 1, J. V. Bailey, Robinson 1, c ne nw, sd 150 ft.

WASHITA COUNTY—T 9n, R 17w, Sec. 23, Miley Pet. Corp., Chapman 1, ne c sw, rig. T 8n, R 19w, Sec. 29, Cooper & Terhune, Blocker 1, nw c, sd 2757 ft. T 8n, R 18w, Sec. 21, Burns & Prince, Dock 1, sw c, sd 1265 ft.

GREER COUNTY—T 7n, R 21w, Sec. 23,



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HOUSTON **TEXAS**

French et al, Murphy 1, sw c nw se, sd 1654 ft.

CADDO COUNTY—T 5n, R 9w, Sec. 6, Mid-Kansas & Ramsey, Culp 6, nw c ne, td 10,079 ft, small show oil and gas, pb to 6780 ft, shot 80 qts 6750-80 ft, no show, pb to 6094 ft, ripped pipe 6077-89 ft, show 10M gas and 20 bbls salt water, sd.

COMANCHE COUNTY—T 4n, R 12w, Sec. 33, Snodgrass et al, Willets 1, ne c nw, sd 515 ft.

GARVIN COUNTY—T 2n, R 2w, Sec. 24, Malernee, Phillips 1, ne c sw, sd 4800 ft.

COAL COUNTY—T 1s, R 8e, Sec. 2, Rabial Oil, Richardson 1, ne c nw, sd 1450 ft.

ATOKA COUNTY—T 3s, R 10e, Sec. 18, Brookshire et al, Quinn 1, nw c, sd 1720 ft.

NORTHERN CALIFORNIA

Company, Well and Location—	Initial Production Bbls	Depth
KERN COUNTY—		
Fullerton Oil Co.'s Core Hole C, 25-27-33	*	2600
CARPENTERIA—		
Texas' Mary Hall B, 34-4-35	*	708

KERN COUNTY

BUTTONWILLOW — Graham and Loftus' Carmel 1, 20-27-22, dr shale 6465 ft. General Pet. Corp.'s Morris 1, showed some gas on production test at 2615 ft, sd. Milham Exploration Co.'s Kern , 8-28-23, sd 2702 ft; Kern 10, 5-28-23, shut in 2690 ft, flowed 8,000,000 cu ft gas; Whittaker 1, 8-28-23, rigging rotary.

DEVIL'S DEN—Cumberland Oil Co.'s Cumberland 2, 17-26-18, fsh for slips, td 3226 ft. Totem Oil Co.'s No. 1, 29-25-19, rigging rotary.

EL TEJON—Descanso Oil Co.'s Tejon 1, 31-11-19, dr lime and shells 1700 ft.

McKITTRICK—T. H. Purman's No. 1, 22-29-21, straightening hole 3240 ft. Welport Oil Co.'s No. 8, 26-29-21, will run formation tester, td 1300 ft.

SEMITROPIC — Fullerton Oil Co.'s Core Hole D, 9-28-24, new lcn.

WEED PATCH—Osborn and Colter's Duff 2, 15-30-29, pumping small amount 14.8 gravity oil, td 2006 ft.

WHEELER RIDGE—Barnsdall's K. C. L. 1, 15-11-20, dr hard gray sand 3935 ft.

SANTA BARBARA COUNTY

CARPENTERIA—Texas' McDougal 3, 34-4-25, rig.

GOLETA—General Pet.'s Hollister 1, 10-4-29, dr gray sand and shale 1335 ft; More 3, 22-4-28, plugged to 4375 ft, td 6912 ft, shut in. Strickland and Tippett's Duncan 1A, 19-4-27, sd 4691 ft.

LOS ALAMOS—Barnsdall's Careaga 1, 31-8-33, dr shale 2565 ft. N. S. Wilson's Orena 1, 2-7-33, will deepen from 3450 ft.

SANTA MARIA COUNTY — O. C. Field Gasolute Co.'s Norswing 1, 8-9-33, plugged to 5127 ft, td 5568 ft, will make pumping test above plug. Western Gulf's Bradley 1, 5-9-33, fsh for whipstock 8566 ft.

SANTA ROSA ISLAND—Standard's No. 1, bldg roads, lcn not surveyed.

VENTURA COUNTY

CONEJO—American Oil Co.'s Powell 1, 33-2-20 dr rock 1600 ft. Sycamore Oil Co.'s Hansen 1, 24-1-20, dr shale 1205 ft. Triunfo Oil Co.'s Conejo 1, 24-1-19, dr shale 3000 ft.

HOPPER CANYON — Bardeen Pet. Co.'s Lankershim 2B, 13-4-19, rigging rotary.

OJAI—A. N. Macrate's Cosmon 1, 27-4-23, grade.

PIRU—Torrey-Ventura Oil Co.'s No. 1, 32-4-18, 13⅜-inch cas cmt 880 ft, td 930 ft, will deepen.

RINCON—Woodrow Oil Co.'s Lomas 1, 4-3-24, bldg roads.

SANTA PAULA — San Pedro-Pt. Fermin Synd.'s Kellerman 2, 13-4-21, pumping 135 bbls 34.5 gravity oil, td 3845 ft.

SOUTH MOUNTAIN—H. H. Bell's Lemon 1, 22-3-21, will deepen from 2231 ft.

MISCELLANEOUS

FRESNO COUNTY—Kingsburg Exploration Co.'s Muller 1, 29-16-23, dr shale 2420 ft.

KINGS COUNTY—Knudsen and Schmidt's Avenal 1, 36-23-17, sd 5715 ft. Eagle Oil and Gas Co.'s No. 1, 15-23-80, bldg new rig, td 1125 ft. Investment Equipment Co.'s No. 1, 18-22-19, rig. Irma Investment Co.'s Watson 2, 7-23-20, testing at 1225 ft. Tulare Basin Gas Co.'s Goodfellow 1, 2-23-19, dr shale 1180 ft. Valley Exploration Co.'s Dudley 1, 12-23-19, dr cmt cmt 1302 ft.

NAPA COUNTY—Napa Oil Co.'s Griffith 6, 7-8-3, 8⅝ inch cas cmt 2850 ft.

SAN LUIS OBISPO COUNTY—Emerich Oil Co.'s No. 1, 13-28-12, dr gray sand 1785 ft. J. D. Martin's Pricco 2A, 5-31-13, redr 3015 ft.

SAN JOAQUIN COUNTY—Union's T. L. W. 1, 14-3-6, dr shale 5300 ft.

TULARE COUNTY—Gravity Exploration Co.'s Buck 1, 11-24-23, rigging up. Ellis and Sanfor's Alpaug 1, 20-24-33, co 1920 ft. Ducor Pet. Co.'s Zimmerman 1, 14-24-27, re-dr 2150 ft.

YOLO COUNTY—Pacific Northern Gas and Oil Co.'s Guinda 1, 23-12-3, co to 1680 ft, flowed water and gas, td 2007 ft, will co to bottom and deepen if necessary.

SOUTHERN CALIFORNIA

CALABASAS—L. W. Rucker's No. 1, 26-1-17, pulling 4¼ inch cas to repair, td 900 ft, may deepen.

HERMOSA BEACH — Corniel Oil Corp.'s No. 1, 31-4-14, sd 3100 ft. Tulsa Oil Co.'s No. 1, 6-4-14, will recmt 6⅝ inch cas at 2035 ft, td 3140 ft. Westwood Oil Producers' No. 2, 6-4-14, fsh for iron 2145 ft.

LYNWOOD—William L. Jones' Graham 1, 31-2-12, oil showings 1050 ft, may run string of cas for test of sand.

NEWPORT BEACH—Ajax Pet. Co.'s B. G. 1, 16-6-10, coring gray sand 7175 ft. Orange County Refining Co.'s No. 5, 29-6-10, sd 1825 ft.

OLINDA—Graham-Loftus Oil Co.'s No. 1, 18-3-9, will test upper showings above 5000 ft, td 9284 ft.

OCEAN PARK—Hines Pet. Corp.'s Happy Days 1, 8-2-15, sd 7405 ft.

PLAYA DEL REY—Cooperative Pet. Development Co.'s No. 1, 26-2-15, rig.

SAN FERNANDO—Willard Marble's Lake 1, 6-2-16, sd 1310 ft.

WILMINGTON—Ranger Pet. Corp.'s Watson 2, 21-4-13, lowered tubing and adjusted pump, production about 100 bbls 14 gravity oil, td 3784 ft. Albert Stevenson's No. 1, 21-4-14, new lcn.

NORTH LOUISIANA

Company, Well and Location—	Initial Production Bbls	Depth
BOSSIER PARISH—		
H. I. Morgan, Strange 1, 23-19-11	¶6	1814
SABINE PARISH—		
Service Drilling Co., Gardner B-1, 7-7-10	*	2812
Ohio Oil Co., Bowman-Hicks 14, 3-7-12	*	2700

BOSSIER PARISH—H. I. Morgan's Strange 1, ne sw sw 23-19-11, 10-inch 123 ft, 6-inch 1721 ft, gauged 6 mil ft gas, 720 lbs. rock pressure, td 1814 ft, upper Trinity. Plain Dealing O&G Co.'s Nattin 1, 15-22-14, 4½ cas 2882 ft, 150 ft oil in hole, wosr, td 2890 ft. Dr. Hankins et al's Newell 1, 12-19-11, sd 1890 ft (correct depth). Triangle Drilling Co.'s Nuckolls 1, sw ne 7-22-12, sp 12½ cas 61 ft.

CADDO PARISH—Pelican Nat. Gas Co.'s Cooper 1, 29-18-14, ta 3648 ft, red shale and lime. Louanna O&G Co., Inc.'s, Hammock 1, se se 32-19-16, elev 258 ft, top bro chalk 1350 ft, base chalk 1735 ft, recov ds, arr res, td 2464 ft hd lime and pyrites. Calatex O&G Co.'s Hudson 1, 8-16-16, 10-inch 80 ft, dr 2360 ft.

CALDWELL PARISH—Monroe Pet. Corp.'s Burton 1, 36-12-2e, sd acct titles, td 2986 ft. Carter Bell et al's Taylor 1, 17-14-4e, 12½ cas 110 ft, sd 1100 ft, high water.

De SOTO PARISH—A. R. Smith's Horn 1, nw se 15-12-16, sp and sd. Rellit O&G Co.'s Cannon Hrs. 1, 12-11-16, sd 1965 ft. E. T. Oakes' Johnson 1, 30-13-15, dr 3290 ft. Walters & Nicholson's Jim Guy 1, 3-11-13, cor 1785 ft. De Soto Dev. Co.'s Nickie 1, sw se 7-13-12, dk.

NATCHITOCHES PARISH—C. M. Talley et al's Talley 1, 29-11-10, sd 1380 ft. J. W. Cooper et al's Cooper 2-A, 35-11-10, sd 1515 ft. Gerson et al's Smith Island 1, sw nw sw 11-10-8w, 12½ cas 90 ft, gas and sw flow killed, arr skid over for new hole, td 585 ft sand. R. A. Keator's Stephens 1, 25-10-6w, 12½ cas 178 ft, sd.

OUACHITA PARISH—S. C. Wilson's W. L. Williams 1, sw se 5-16-1e, 12½ cas 180 ft, dr 2675 ft, chalk.

RICHLAND PARISH—National Gas Co.'s Singletary 1, 20-18-7e, sd 2515 ft.

SABINE PARISH—J. J. Kean's Belton 1, nw se ne 31-9-13, 8-inch 1590 ft at top chalk, base chalk 2115 ft, dr 2896 ft. R. L. Gay, Tr.'s, Long-Bell A-1, nw nw 10-8-13, elev 265.4 ft, top Glen Rose 4204 ft, 6 ft core oolitic lime 4775-89 ft, had saturation light oil, ds recov, sr 4320 ft, td 4789 ft (Glen Rose). Coats Pet. Co.'s Stille 1, nw se 35-8-13, lcn. S. Martinez 1, se ne 3-7-13, lcn; F. Martinez 1, ne nw 11-7-13, 6-inch 2036 ft, dry, arr abn, td 2500 ft; F. Martinez 2, 11-7-13, dk; G. Martinez 1, sw sw 2-7-13, dk; Patterson 1, sw sw 2-7-13, 10-in 100 ft, 6-in 2050 ft, dry arr abn, td 2534 ft. Mansfield Hdw. 1, sw se se 36-8-13, 10-inch 100 ft, 6-inch 2070 ft, flowed 3 hours 25 bbls hour by heads, went dead, setting 2-inch tub with pckr, td 2403 ft. Hudson & Bird's Walden 1, sw ne 26-8-11, elev 290 ft, 10-inch 100 ft, top marl 2355 ft, top bro chalk 2440 ft, sd 2454 ft chalk. Zeke Lohman's McCormick 1, ne sw 2-7-11, cemtd 6-inch 2357 ft. Loring Oil Co.'s Bowman-Hicks 18, sw nw 15-7-12, elev 264.1 ft, 15½ cas 100 ft, 9¾ cas 3950 ft, top marl 2482 ft, top chalk 2537 ft, top lower Cretaceous 3998 ft, dr 4600 ft. Root Ref. Co.'s Peterson 1, sw ne 34-7-13, 10-inch 40 ft, sd 2243 ft. G. M. LeGrand's McGough 1, 3-8-10, dk. W. F. Lacey's McNeely 2, ne ne 14-7-11, 6-inch 2451 ft, dry arr abn, td 2558 ft. Beene et al's Ezernack 1, sw ne 2-7-13, sd 1650 ft. Service Royalty Co.'s Gardner B-1, sw nw 7-7-10, 10-inch 102 ft, 6-inch 2450 ft, dry abn, td 2812 ft. Baird & Stone's McNeely 1, 14-7-11, 10-inch 100 ft, 6-inch 2375 ft, flowing est 125 bbls day through 2-in tub & pckr, wo gauge, td 2943 ft. Quayhagen 1, sw se 11-7-11, rig. J. E. Smitherman's Smith 1, sw nw 7-7-10, 6-inch 2518 ft, 200 ft oil in hole, arr swab, td 2811 ft. Ohio Oil Co.'s Bowman-Hicks 14, nw sw 3-7-12, 10-inch 129 ft, 6-inch 2326 ft, dry abn, td 2700 ft. Frank Foster, Inc.'s, Stevens 1, ne nw nw 20-9-11, 10-inch 100 ft, top chalk 1765 ft, base 2235 ft, dr 2950 ft shale. W. M. Coats' McNeely 2, nw ne 14-7-11, dk. Stovall Drilling Co.'s Nulton 3, ne se 2-7-13, lcn. Baird & Hunter's Petty 1, nw se 11-7-11, rig. H. W. Perritt's Brown 1, sw se 6-7-10, 10-inch 103 ft, dr 1000 ft. Bahan & Morgan's Quahagen 1, se se 11-7-11, sp 10-inch 100 ft, dr 1500 ft. Sabine Prod. Co.'s Pearce 3, se nw 10-7-11, dk. E. F. Neely's Clanan 2, se nw 14-7-11, lcn.

TENSAS PARISH—A. R. Willis' Curry 1, 39-11-12e, sd 3545 ft. Stovall Drilling Co.'s Miller 1, ne sw 10-10-10e, lcn.

WEBSTER PARISH—Wadley et al's Matthews 1, 11-23-9, rig up and wo.

ARKANSAS

CLAY COUNTY—S. C. Jeffus, Tr.'s, Underwood 1, 4-20-8e, sd 1260 ft.

CLEBURNE COUNTY—Frank S. Craver's Donithan Lbr. Co. 1, 33-11-9, sd 3470 ft.

CLEVELAND COUNTY—Crum & Stilwell's Bell 1, 10-10s-12w, rigged up and sd.

COLUMBIA COUNTY—Kendall Oil Co.'s Fullenwider & Kitchen 1, ne ne 13-17-22, sd 814 ft.

DALLAS COUNTY—Zepp O&G Co.'s Hillman 3, nw ne 20-10-13, lcn. Jno. James, Tr.'s, Fordyce Lbr. Co. 1, 11-9s-15w, dr 2522 ft, hd sand.

DREW COUNTY—Cooperative Dev. Co.'s Ogles 1, ne nw 35-15-5, sd 1890 ft.

HOT SPRINGS COUNTY—Starr Oil Co.'s Cunningham 1, 11-5-16, sd 1262 ft, shale and bldrs.

LINCOLN COUNTY—L. B. Cook, Tr.'s, McGehee Pltg. Co. 1, 5-8s-7w, sd 2985 ft.

LITTLE RIVER COUNTY—Fay Roberts Oil Co.'s Russell 1, 25-12-29, lcn.

LOGAN COUNTY—M. W. Greesom's Parks 1, 21-8-24, sd 1309 ft. J. H. Flowers' White 1, 13-5-26, sd 3610 ft.

MILLER COUNTY — W. E. Noel et al's Dickson 1, 11-20-27, sd 1955 ft. Fitzwater et al's E. L. Beck 1, sw se 35-15-26, sd 2220 ft.

OUACHITA COUNTY—W. H. Copenhaver et al's Berg 1, se se 13-15-17, sd 2011 ft.

PIKE COUNTY—Kentucky-Ark. O&G Co., Inc.'s Tilyou 1, 26-8-24, ta 2920 ft; East 1, 13-9-23, 10-inch 288 ft, sd 1812 ft, hd rock, acct high water.

PRAIRIE COUNTY—Powell Creek O&G Co.'s Kloss 1, ne nw 3-4n-6w, partly rigged up and sd.

SCOTT COUNTY — Heavener O&G Co.'s Reser 1, 36-4-26, sd 1436 ft. Waldren O&G Co.'s J. G. White 1, 17-3n-29w, sd 1860 ft (sec hole).

SEBASTIAN COUNTY—M. W. Greesom's Spears 1, 9-7-29w, sd 1536 ft.

SEVIER COUNTY—Tri-State O&G Co.'s Bank of DeQueen 1, 34-8s-32w, sd 950 ft.

ST. FRANCIS COUNTY—Walmer Oil Co.'s White 1, sw nw 1-4n-2e, rig.

UNION COUNTY — Southern Prod. Co.'s Wingfield 1, 16-19-15, repr rig and arr res, td 2608 ft. Lion O. R. Co. et al's Guy P. Hayes A-9, ne ne 4-16-15, elev 96 ft, sd with hung ds, acct high water, td 7255 ft, salt. Drillers Oil & Dev. Co.'s Pickering 1, 1-17-16, wosr 2134 ft; Haney 1, nw se 1-17-16, move in rig. Modisette et al's Union Sawmill 1, sw nw 13-18-13, 10-in 167 ft, top mud 2266 ft, tested sw slight oil show, 2266-80 ft, sd 2280 ft. Hill et al's Barnes 1, ne ne 21-19-15, dk.

WASHINGTON COUNTY — C. H. Willoughby's Jones 1, 34-16-30, sd 150 ft.

YELL COUNTY—T. Luckett's Balcon 1, 36-7-12, ta 5640 ft.

MISSISSIPPI

CHICKASAW COUNTY—Hightower & Golson's Fleming 1, 20-13-3e, ta 1640 ft.

HINDS COUNTY (Edwards Dist.)—Miss.-Minn. Oil Co.'s Edwards Land Co. 1, sw ne 23-6n-4w, sp 12½ cas 110 ft.

JASPER COUNTY (Bay Springs Dist.)—Bay Springs Pet., Inc.'s, J. H. Keyes 1, nw ne 21-2n-10e, ta 3408 ft, Wilcox.

LAMAR COUNTY (Purvis Dist.)—Stauffer & Kouri's Bond 1, se ne 18-2n-14w, move in rig.

LOWNDES COUNTY — Lowndes County O&G Co.'s Car Est. 1, ne nw 34-17n-16e, rig.

MONROE COUNTY (Amory)—Amory Dev. Co.'s Bourland 1, 2-15-19, ta 3007 ft brown sand. P. J. McAlpine's Cowart 1, 2-12s-19w, ta 3793 ft, brown sandy lime.

NEWTON COUNTY (Newton Dist.)—Dalton Dev. Co.'s Majure 1, se se 25-6n-11e, 10-inch 295 ft, dk blown down, sd 1420 ft.

NOXUBEE COUNTY — Thompson O&G Synd.'s Donahue 1, se ne 25-16n-17e, elev 280 ft, sd 1735 ft; Ames 1, nw nw 24-16-18e, dk pat.

RANKIN COUNTY (Jackson Dist.)—Atkisson & Dyer's Valentour 1, nw nw 18-5-2e, elev 70 ft, wo cas 2428 ft. Majestic O&G Co.'s Elton Lbr. Co. 1, 10-4n-3e, dk.

SCOTT COUNTY—Culley et al's Owen 1, 2-8n-9e, dk.

SHARKEY COUNTY (Nitta Yuma Dist.)—United Gas Pub. Serv. Co.'s Lenhart 1, sw se 14-14n-6w, elev 100.6 ft, 15½ cas 245 ft, sd repr rig 750 ft.

STONE COUNTY—Hercules Sulphur Expl. Synd.'s Lang 2, sw sw 28-3s-11w, dr hd lime 1764 ft.

WARREN COUNTY (Vicksburg Dist.)—Eagle Lake O&G Co.'s Kiger 1, sw ne 9-18-e, sd 2607 ft.

WEBSTER COUNTY — P. J. McAlpine's Henley 1, se nw 15-21-11e, cored gravel, sd 1800 ft.

ALABAMA

MADISON COUNTY — Tennessee Valley O&G Co.'s Fee 4, 1-4s-2e, no report.

SUMTER COUNTY (Livingston Dist.)—Forked Lightning O&G Co.'s Nixon 1, 30-20-2w, dk.

WASHINGTON COUNTY—Hobson et al's Hobson Bros. 1, 9-8-2w, ta 1450 ft. Oscar Brown's U. S. Land & Cotton 2, 23-3-2w, ta 700 ft.

TENNESSEE

CHESTER COUNTY—Gilmore et al's Scott 1, 10-inch 552 ft, dr 835 ft, Selma clay.

DECATUR COUNTY—Chester County O&G Co.'s Montgomery 1, arr res, td 2511 ft.

FLORIDA

DADE COUNTY—East Coast Oil & Nat. Gas Co.'s Warick 1, 12-55s-40e, dr 5305 ft. Miami, Fla., Oil Co.'s Chevalier Corp., 1, nw nw 19-54s-35e, elev 9 ft, arr re-land 6-inch cas, td 4600 ft.

LEVY COUNTY — Suwanee Pet. Corp.'s Sholtz 1, nw se 9-15s-13e, elev 34 ft, sd 4010 ft.

MANATEE COUNTY—Surprise Oil Co.'s Palmetto 1, 13-34s-17e, sd 852 ft.

PINELLAS County—Pioneer Oil & Mining Co.'s Yerxa et al 1, 2-29s-16e, co, td 1151 ft.

WALTON COUNTY—Calumet Co.'s Walton L. & T. Co. 1, se ne 7-1n-17w, dk pat. Oil City Corp.'s Walton L&T Co. 1, ne nw 12-1n-19w, cor below 4300 ft.

▼ PERMITS ▼

(Continued from page 63)

ney, 336, 8, Pena sur, 360 ft from w and 340 ft from s line; 9, Cadena sur, 355 ft from w and 100 ft from s line. Humble Oil & Ref. Co., Houston, W. Shaw, 157, 3, F. Cordova sur, 330 ft from e and 175 ft from s line; D. C. Joyner, 59, 3, F. Cordova sur, 175 ft from n and 540 ft from w line; J. Wooley, 100, 3, T. J. Martin sur, 342 ft from s and 330 ft from e line; I. Holt, C, 99, 4, W. N. Bears sur, 330 ft from n and e lines. Sun Oil Co., Dallas, A. J. Watkins, 54, 3, M. J. Pru sur, 213 ft from n and 490 ft from e line.

RAINS COUNTY—Geo. J. Greer et al, Dallas, R. Harper, 100, 1, D. Rose sur, 150 ft from s and e lines.

SMITH COUNTY—Texas Co., Shreveport, La., M. Blackwell, 100, 6, Jas. Jordan sur, 800 ft from e and 150 ft from s line. Florence Womack, Tyler, S. S. Cook, 20, 1, J. Vargas sur, 150 ft from e and 330 ft from s line. Gulf Prod. Co., Houston, H. Mayfield, 94, 2, Jas. Jordan sur, 222 ft from e and 1238 ft from s line.

SHACKLEFORD COUNTY — Worth Pet. Co., Fort Worth, A. A. Clarke, 67, 5, S 2, Blind Asy. sur, 300 ft w of No. 1.

STARR COUNTY—Quien Sabe Oil & Gas Co., Rio Grande City, H. K. Kusch, 40, B1, Por. 76, Tr. 7, nw corner of Blk. 11.

UPSHUR COUNTY—Shell Pet. Corp., Dallas, C. C. Landers, 206, 11, Hooper & King sur, 235 ft from n and 330 ft from w line.

VAN ZANDT COUNTY—F. B. Smith, 80, 10, J. Walling sur, 300 ft e of No. 9; B. W. Russell, 81, 2, D. Rose sur, 150 ft from n and e lines; A. R. Tunnell, 101, 9, J. Walling sur, 250 ft from e and 644 ft from s line; J. H. Leonard, 47, 3. M. Gross sur, 1230 ft from n and 200 ft from e line.

WARD COUNTY — Sturmn-Nolen Drilling Co., Grand Falls, J. D. Jones, 80, 2, S 25, B B29, H&TC sur, 330 ft from ne and se lines. Eppenauer Drilling Co., San Angelo, Townsend-Moore, 40, 1, S 17, B 34, H&TC sur, 330 ft from sw and 990 ft from se line.

WILLIAMSON COUNTY—G. B. Peterman, Taylor, W. Galler, 140, 1, S 7, HT&B sur, 1260 ft from n and 215 ft from w line.

ZAPATA COUNTY—O. W. Killam, Laredo, A. Bustamante, 40, 18, S 5, B 11, Comitas sur, 900 ft from ne and 863 ft from se line.

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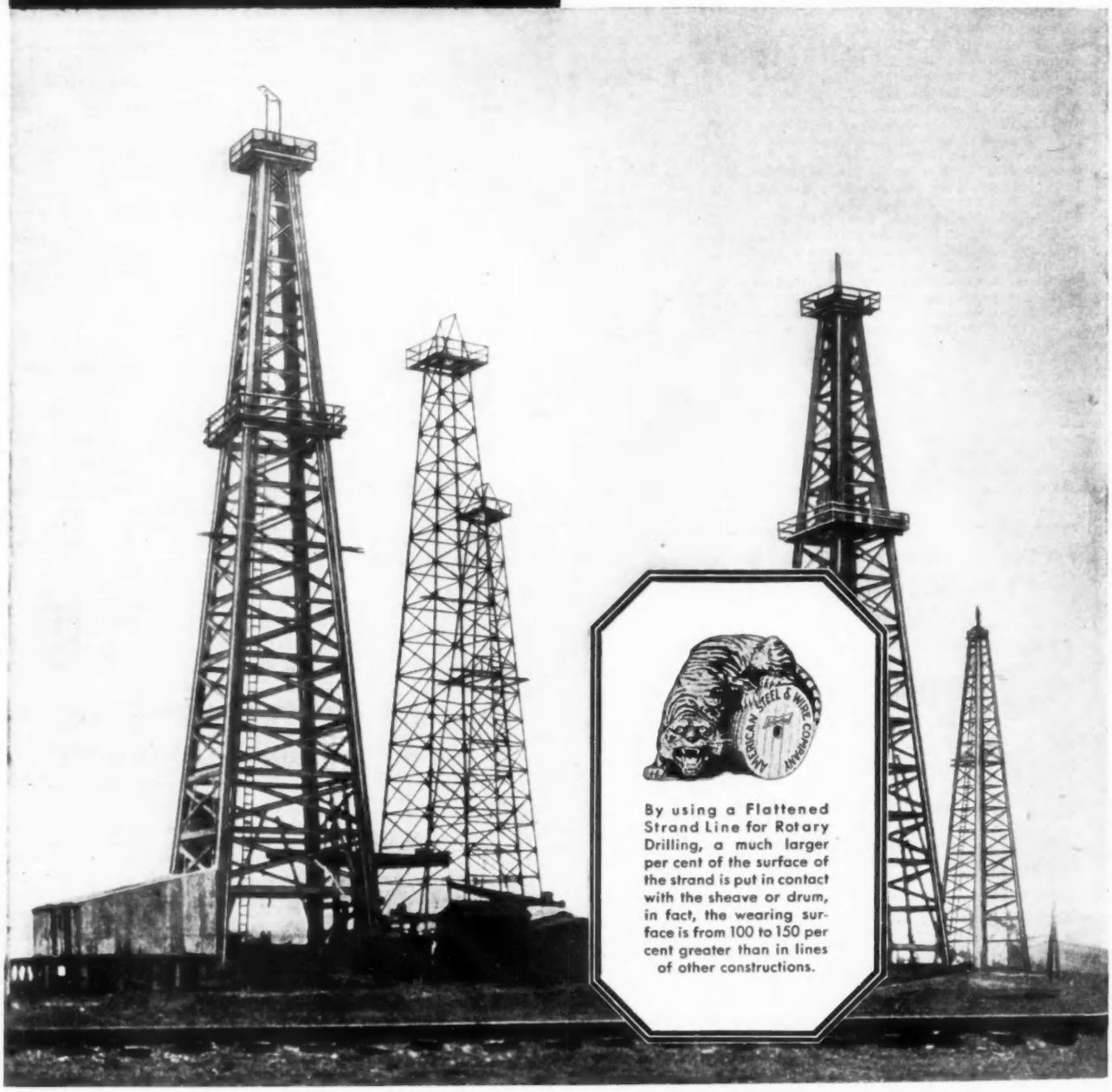
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New Equipment for the Field

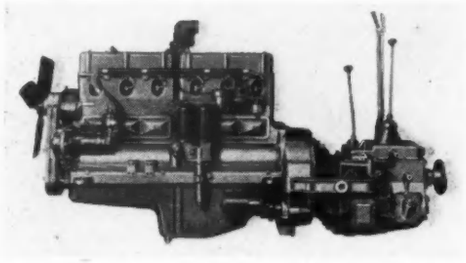
MACHINERY - TOOLS CATALOGS - BOOKS

▼ ▼ ▼

1. Two New Trucks

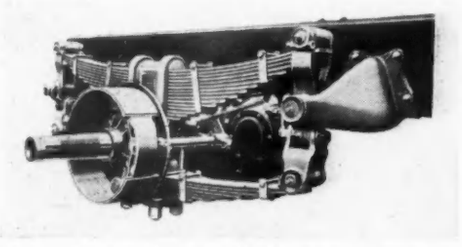
INTERNATIONAL HARVESTER COMPANY

International Harvester Company, 606 South Michigan Avenue, Chicago, announces two new six-cylinder trucks, each with a rated capacity of five tons. These are the models A-7 and A-8, available in wheelbases of 160, 180, 200 and 225 inches.



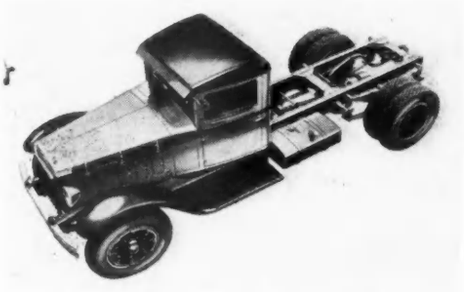
Six-cylinder engine of new heavy-duty Models A-7 and A-8, International trucks.

The engine for Model A-7 develops 107 brake horsepower, and that for Model A-8 develops 132 brake horsepower, both at governed speeds of 1800 r.p.m. The clutch for both models is single plate, and the transmissions have five speeds forward and two reverse.



Two of the four semi-elliptic rear springs, showing how one is mounted above the other.

A feature of the new models is that there are four semi-elliptic springs at the rear end, the extra two springs being used to equalize the torque and driving stresses from the upper and lower springs when power is applied. The arrangement of the springs permits installation of unusually large dual tires.



A-8 chassis with all-steel cab

The rear axles are full-floating, double reduction type with spiral bevel gears in the first reduction and herringbone gears for the second reduction. On both models the front wheel brakes are of the internal-expanding, self-energizing shoe type with a vacuum operated booster; the rear brakes are of the internal-expanding, wrap-band type.

2. Force Feed Lubricator

MANZEL BROTHERS COMPANY

Manzel Brothers Company, 309 Babcock Street, Buffalo, New York, announce a new model force feed lubricator, their Model "25." This has been designed primarily with the needs of the oil industry in mind and will operate successfully against the higher steam, gas and air pressures now in general use.

An important feature is the accessibility of the working parts. While all working parts are completely enclosed in the reservoir, where they are out of dust and dirt and work in the oil continually, any unit may be taken from the reservoir at any time by simply removing two screws and without stopping the lubricator or the equipment on which installed, or, in the case of multiple feed lubricators, without interfering with any other units.

In addition, the discharge valves are placed in individual cages and may be removed for repairs, cleaning, or replace-

Force Feed "Manzel" Model 25 Lubricator

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ment with new ones if desired, without even removing the unit from the reservoir.

These features permit of making repairs, if necessary, without loss of production.

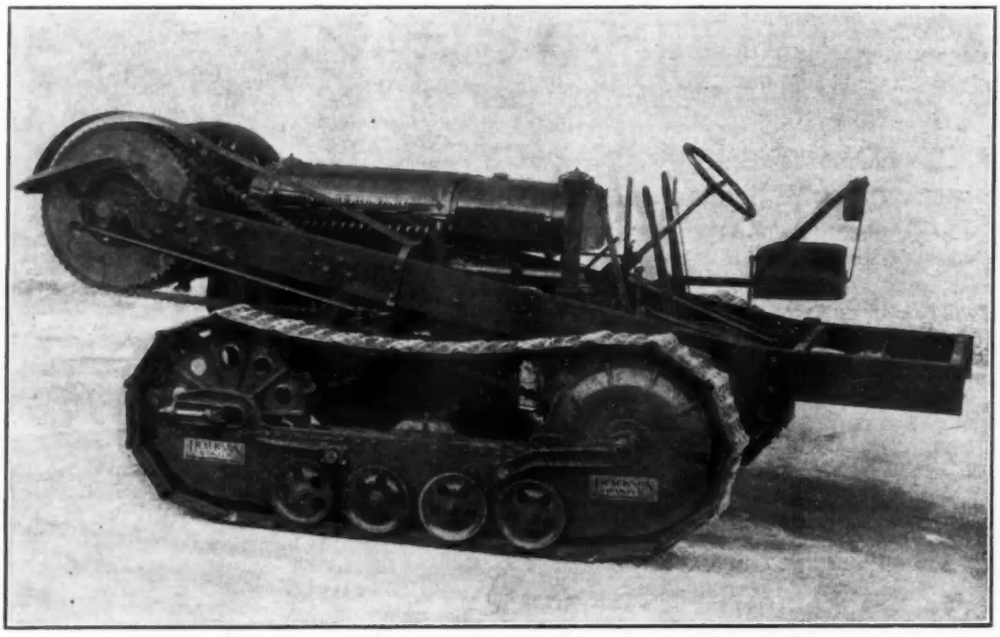
Each pumping unit is independently regulated and is capable of fine adjustment. The ability to feed minute quantities of oil against high gas, steam or air pressures makes these lubricators especially satisfactory on compressors.

An extra large filling cup is provided which permits refilling the reservoir easily. This cup is fitted with a hinged cover and removable strainer.

These lubricators are somewhat larger in size than previous "Manzel" models, thereby giving greater reservoir capacity and making frequent fillings unnecessary. The range of feed is also somewhat greater, permitting of feeding larger amounts of oil to the cylinders of heavy duty pumps or engines which require considerable oil for efficient lubrication.

The lubricator has a constant sight feed, with a clear vision sight glass to show the amount of oil being supplied; a corner gauge glass to show the height of oil in the reservoir and a hand attachment for use before starting the engine. An extra large drain-out plug is also provided to permit flushing out the lubricator reservoir at any time.

These lubricators can be furnished with from one to 30 feeds, in any desired capacity, and with either ratchet, rotary or direct drive.



Shaffer Hoist Mounted on McCormick-Deering Tractor

3. Hoists

THE SHAFFER SPECIALTY COMPANY

The Shaffer Specialty Company, 2440 East King, Tulsa, Oklahoma, offers six models of hoists, three for mounting on McCormick-Deering tractors, and three for mounting on trucks, but independently powered by McCormick-Deering tractors.

The first combination meets the requirement for a hoist-equipped, crawler-type tractor for operation where surface conditions render wheel type units impractical. The models mounted on the tractor are the "Junior", "Senior", and "Super" models. The "Junior" is designed to service wells of 2500 feet or less depth. It is powered by a Model 20 McCormick-Deering tractor. The "Senior" model is designed to service wells of from 2500- to 4000-foot depths, and is powered by the same tractor as the "Junior" model. The "Super" model is designed to service wells 4000 feet deep or deeper. It is powered by a 15-30 McCormick-Deering tractor.

The three models for mounting on a truck are designated by the same names and designed for corresponding uses. The power units for these models consist of the same tractors, mounted on the bed of the truck, but minus their running gear, axles and steering mechanisms.

Catalogs • Bulletins

Draft Gauge

The Hays Corporation, Michigan City, Indiana, has released for distribution draft gage catalog PGA-32, featuring pointer gauges for draft, pressure, differentials and temperature.

Regulators

The Mercon Regulator Company, 1 LaSalle Street, Chicago, Illinois, has issued for distribution during 1932 Catalog No. 5, covering its complete line of pressure and flow regulators and containing a description of its new adjustable port features and of its new liquid level controllers.

Geology of Iberia Parish

The Bureau of Scientific Research of the Minerals division of the Louisiana Conservation Commission, New Court Building, New Orleans, Louisiana, recently published Geological Bulletin No. 1, devoted to "Geology of Iberia Parish." Copies of the bulletin may be obtained from the above address.

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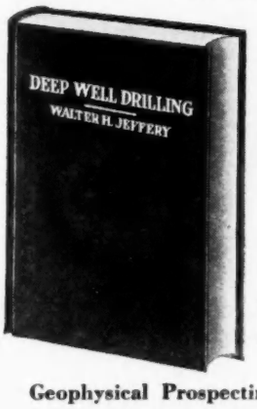

DEEP WELL DRILLING

by

WALTER H. JEFFERY

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Preparatory to writing the new book, the author spent weeks in a first hand study of modern methods of drilling by the rotary system, and of completing wells, controlling high pressures and operating wells in the deep fields of California and Oklahoma.

The third edition contains 816 pages, 150 pages more than the second edition, and 452 illustrations, but the price is the same, $6.00.

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NEWS *from the* *Industry's* EQUIPMENT MAKERS

Keeping in touch with developments with Manufacturers and Supply Dealers

Final Plans for Technical Programs Announced for Los Angeles Exposition

Los Angeles.—Final plans for several of the technical meetings to be held at the Third Annual Oil Equipment and Engineering Exposition have been completed and some interesting programs have been arranged. Several of the exhibitors have also moved in the equipment they will display and are decorating their booths in preparation for the opening on March 21. The show will be held from March 21 to 27, at the exposition buildings and grounds on Alameda Boulevard and 131st Street, Los Angeles.

Three papers will be presented by the American Institute of Mining and Metallurgical Engineers at its meeting on the afternoon of March 23. These will be: "The Use of Water Table Data in Oil Exploration," by E. K. Soper, associate professor of geology, University of California at Los Angeles.

"The New Conception of Oil Production as Applied to the Santa Fe Springs Gas Case," by John F. Dodge, professor of petroleum engineering, University of Southern California.

Resume of a paper on the "Selection and Use of Screen Pipe," by Clifford Wilson—the resume being given by Stanley Herold, consulting engineer.

Invitations have been sent to the American Society of Civil Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers to participate in this meeting.

Another interesting meeting will be held by the California Natural Gasoline Association on March 24. This will be preceded by a dinner which will be served 7 p.m. in the Convention Hall of the Exposition and to which all oil and gas men are invited. Tickets to this dinner can be secured at the association's booths, Nos. 87 and 100 in the main building. The program will be featured by a paper on "Regulation and Its Part in Liquefied Gas Plants," by W. T. Mayer, engineer from the San Francisco headquarters of the Neilan Company, Ltd. This will be followed by a three reel movie "The History of Aviation," sponsored by the Richfield Oil Company.

The California Natural Gasoline Association will also have its column on display throughout the exposition. This will be installed and operated by Edgar E. Shafer, Jr., who was one of the first to adopt the new column and who has been operating one for the last several months in his Gas Research and Engineering Service Laboratory in Alhambra. The vacuum pump will be furnished through the courtesy of Braun Corporation. The liquid air will be furnished by Air Reduction Sales Company and tests, requiring from six to eight hours each, will be run daily by Mr. Shafer.

The cooperation of the American Petroleum Institute, the engineering societies and the various associations connected with the different branches of the oil industry will make the third annual one of the most educational expositions yet held. The new equipment that has been developed during the past year will be most educational and the displays by the manufacturers of oil equipment will greatly benefit everyone interested in drilling, production, refining, pipe line, gas and marketing. The Southern California Meter Association will have one day set aside and will visit the exposition in a body.

During the week previous to the show and while the show is in progress there will be a display of models of oil equipment in the windows of the Security First National Bank at Seventh and Spring Streets, Los Angeles. These models will be furnished by exhibitors at the exposition and this exhibit in the downtown district is given them through the cooperation of the bank.

Old and New Type Mud Scale in Roumania

Martin-Decker Automatic Recording Mud Scale installed on a well in the Boldesti field in Roumania. The workman in the center is holding the more primitive contrivance which was replaced

The Nordberg Manufacturing Company, Milwaukee, Wisconsin, announces acquisition of the services of A. E. Ballin as vice president in charge of sales and engineering. Mr. Ballin formerly was president of McIntosh & Seymour Corporation.

In a manufacturer's note which appeared in a recent issued of THE OIL WEEKLY, the name of the secretary-treasurer and general manager of Gulf Coast Machine and Supply Company was given as S. O. Campbell when it should have been S. O. Hampil.

Chain Belt Company, Milwaukee, announces that Russell G. Davis, manager of the company's Houston office for eight years, will leave for Chicago in March to become manager of that office. Prior to coming to Houston, Mr. Davis was with Chain Belt Company for eight years in Milwaukee.

Taubman Supply Company announces that C. C. Crider, formerly purchasing agent for the company, has been made general manager.

Squeaks from the Bull Wheel

▼ ▼ ▼

Wife (who is always ailing)—"You will bury me by the side of my first husband, won't you, dear?"

Husband—"with pleasure, darling."

"Why don't you get a good brush? You could do twice as much work."

Painter: "Well, sir, I ain't got twice as much work to do."

The absent-minded professor was busy in his study. "Have you seen this?" said his wife entering. "There's a report in the paper of your death."

"Is that so?" returned the professor without looking up. "We must remember to send a wreath."

Wife—"The man I refused, before I married you, is now rich?"

Husband—"But remember, my dear, he didn't marry you."

"Why so blue, Rastus?"

"Ah lost mah chickens."

"Don't worry, chickens go home to roost."

"Dat's de trouble, boss, they went!"

Visitor—"Do you like reciting, dear?"

Child—"Oh, no, I hate it, really. But mummy makes me do it when she wants people to go."

A minister told his flock that he had a "call" to go to another church. One of the deacons asked how much more he was offered.

"Three hundred dollars," was the reply.

"Well, I don't blame you for going," remarked the deacon, "but you should be more exact in your language, parson. That isn't a 'call,' that's a 'raise.'"

Street-Car Conductor: "How old are you, my little girl?"

Little Boston Girl: "If the corporation doesn't object, I'd prefer to pay full fare and keep my own statistics."

Humphrey—"I think Napoleon was a much greater soldier than Bonaparte."

Arthur—"But they were identical."

Humphrey—"That may be. But I always will believe that Napoleon was much the more identical of the two."

"Traveled all over the world, eh? Went up the Rhine, I suppose?"

"Climbed it to the top."

"Saw the Lion at St. Mark?"

"Fed it."

"And visited the Black Sea?"

"Filled my fountain pen there."

Mrs. Knagg (with magazine)—"It says here that a South Sea Island wife isn't supposed to talk until her husband speaks first."

Knagg—"I'll bet some of those husbands are fools enough to do it."

"Who is the cleverest boy in your class?"

"Jens Kristian—he can waggle his ears."

"I can't see why they have a man to steer from the rear of the fire department's ladder truck," said Mrs. Tellum.

"Well, it's a necessary thing, I suppose," replied Mrs. Backseat, "but I agree with you that it's not a man's work."

Prof.—"Will you men please stop exchanging notes in the back of the room?"

Stude.—"Them ain't notes. Them's dollar bills. We're shooting craps."

Prof.—"Oh, pardon me."

Professor Pickering has discovered a heavenly body, far off beyond the planet Pluto, but coming this way, and has named it for the time being just "P." Don't give up hope, boys. It may be prosperity.—Elmer C. Adams, in the Detroit News.

"Excuse me, but your chickens come into my garden every day and—"

"Impossible, sir. My chickens stay home."

"Very well, then I'll keep the eggs I find every evening."

Neighbor—"Er—Mrs. Brown—you've got odd stockings on."

Mrs. Brown—"Yes, dearie, that often 'appens to ladies what 'ave got more than one pair."

An Englishman was visiting this country for the first time, and as he was driving along the highway saw a sign, "Drive Slow. This means YOU!"

The Englishman stopped in surprise: "My word! how did they know I was here?"

An enterprising youngster had started a new business. His business card gave the following information:

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Tots and Kiddies took
to school and returned,
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dishin—if received that
way. Military discipline.
Rates 25c a week. Refined
conversashin. No extra
charge for nose wipin.
All I ast is a trial.

A golf professional hired by a big department store to give golf lessons, was approached by two women.

"Do you desire to learn how to play golf, madam?" he asked one of them.

"Oh, no," was the reply. "It's my friend who wants to learn. I learned yesterday."

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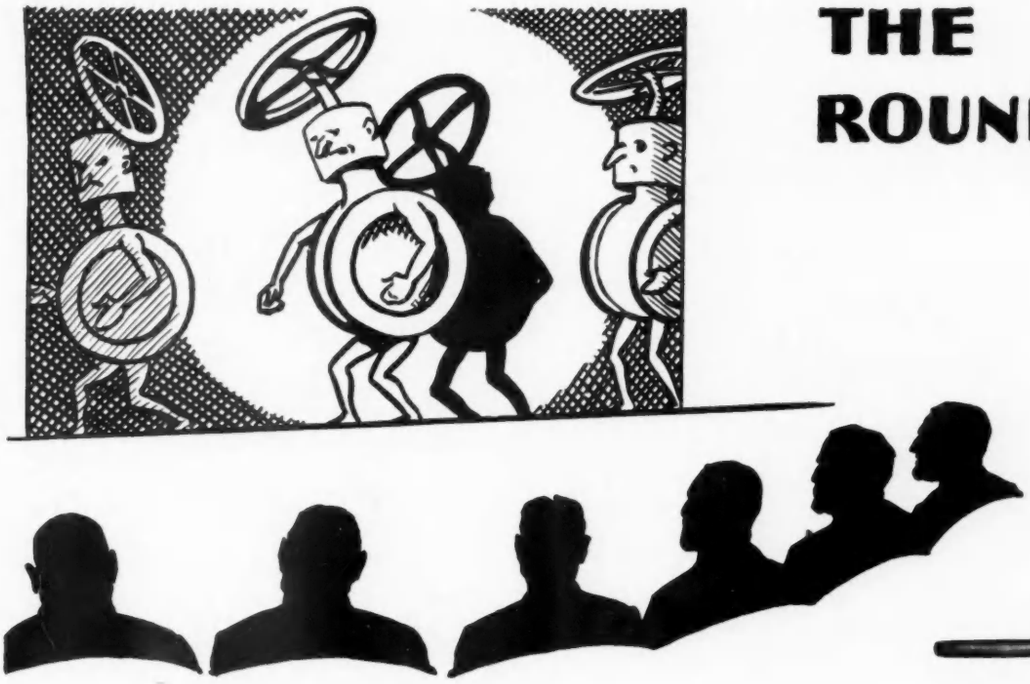

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